Grade 7 Advanced Workbook

22 lessons · printable · answer key at the back

Name _____ Date _____

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1-1

Positive and Negative Numbers

WORKED EXAMPLE

$-70 + 41 = -29$

1. Add and subtract integers

Add or subtract the integers.

1 $-87 + 78 =$ _____

2 $68 - 72 =$ _____

3 $-1 + 69 =$ _____

4 $-84 + 92 =$ _____

5 $-47 + 73 =$ _____

6 $3 - 67 =$ _____

7 $-5 + 94 =$ _____

8 $29 - 45 =$ _____

9 $11 - 70 =$ _____

10 $-63 + 100 =$ _____

11 $30 - 57 =$ _____

12 $-76 + 99 =$ _____

13 $-59 + 93 =$ _____

14 $-55 + 61 =$ _____

15 $19 - 94 =$ _____

16 $9 - 73 =$ _____

17 $-63 + 49 =$ _____

18 $-84 + 96 =$ _____

19 $24 - 100 =$ _____

20 $-45 + 66 =$ _____

21 $-58 + 89 =$ _____

22 $5 - 88 =$ _____

23 $1 - 83 =$ _____

24 $-100 + 64 =$ _____

25 $-61 + 86 =$ _____

26 $27 - 98 =$ _____

27 $-80 + 63 =$ _____

28 $-14 + 95 =$ _____

29 $12 - 75 =$ _____

30 $3 - 52 =$ _____

31 $-55 + 87 =$ _____

32 $47 - 82 =$ _____

33 $39 - 40 =$ _____

34 $-73 + 89 =$ _____

35 $72 - 80 =$ _____

36 $94 - 96 =$ _____

37 $-92 + 76 =$ _____

38 $3 - 84 =$ _____

39 $90 - 96 =$ _____

40 $21 - 48 =$ _____

41 $-89 + 89 =$ _____

42 $-43 + 100 =$ _____

43 $0 - 45 =$ _____

44 $46 - 73 =$ _____

45 $-81 + 86 =$ _____

46 $22 - 34 =$ _____

47 $24 - 62 =$ _____

48 $92 - 95 =$ _____

49 $23 - 90 =$ _____

50 $16 - 30 =$ _____

Multiplying and Dividing Integers

WORKED EXAMPLE

$-54 \div (-9) = 6$

2. Multiplying and dividing integers

Multiply or divide. Remember what two negative signs make.

1 $-12 \times 10 =$ _____

2 $-6 \times (-5) =$ _____

3 $-11 \times 11 =$ _____

4 $20 \div (-4) =$ _____

5 $-40 \div (-5) =$ _____

6 $70 \div (-10) =$ _____

7 $56 \div (-8) =$ _____

8 $-12 \times 9 =$ _____

9 $49 \div (-7) =$ _____

10 $-5 \times (-12) =$ _____

11 $11 \times (-5) =$ _____

12 $-4 \times (-8) =$ _____

13 $-7 \times (-9) =$ _____

14 $-10 \times 8 =$ _____

15 $-5 \times (-9) =$ _____

16 $-4 \times (-7) =$ _____

17 $-6 \times (-2) =$ _____

18 $-10 \times (-8) =$ _____

19 $-7 \times (-10) =$ _____

20 $9 \times (-6) =$ _____

21 $63 \div (-7) =$ _____

22 $88 \div (-8) =$ _____

23 $-12 \times (-4) =$ _____

24 $-88 \div (-8) =$ _____

3. Add and subtract integers

Add or subtract the integers.

25 $-88 + 77 =$ _____

26 $39 - 64 =$ _____

27 $-82 + 56 =$ _____

28 $-46 + 95 =$ _____

29 $-7 + 61 =$ _____

30 $58 - 94 =$ _____

31 $-69 + 94 =$ _____

32 $5 - 27 =$ _____

33 $46 - 85 =$ _____

34 $83 - 100 =$ _____

35 $12 - 35 =$ _____

36 $13 - 83 =$ _____

37 $32 - 82 =$ _____

38 $-57 + 68 =$ _____

39 $1 - 85 =$ _____

40 $76 - 92 =$ _____

41 $-45 + 51 =$ _____

42 $11 - 77 =$ _____

43 $36 - 78 =$ _____

44 $-43 + 53 =$ _____

45 $63 - 82 =$ _____

46 $37 - 66 =$ _____

47 $-35 + 91 =$ _____

48 $-6 + 67 =$ _____

Ratio and Proportion

WORKED EXAMPLE

$24 for 3 = $8 each

4. Unit rates

Find the unit rate for each.

1 $45 for 5 = ____ each
2 $42 for 6 = ____ each
3 $12 for 3 = ____ each
4 $24 for 4 = ____ each
5 $9 for 3 = ____ each
6 $8 for 4 = ____ each
7 $24 for 6 = ____ each
8 $18 for 3 = ____ each
9 $28 for 4 = ____ each
10 $55 for 5 = ____ each
11 $40 for 5 = ____ each
12 $35 for 7 = ____ each
13 $21 for 7 = ____ each
14 $56 for 7 = ____ each
15 $80 for 8 = ____ each
16 $50 for 5 = ____ each
17 $66 for 6 = ____ each
18 $12 for 2 = ____ each
19 $15 for 5 = ____ each
20 $15 for 3 = ____ each
21 $6 for 2 = ____ each
22 $20 for 2 = ____ each
23 $22 for 2 = ____ each
24 $20 for 5 = ____ each
25 $32 for 8 = ____ each
26 $14 for 7 = ____ each
27 $36 for 3 = ____ each
28 $27 for 3 = ____ each
29 $63 for 7 = ____ each
30 $54 for 6 = ____ each
31 $48 for 6 = ____ each
32 $8 for 2 = ____ each
33 $33 for 3 = ____ each
34 $48 for 8 = ____ each

5. Proportions

Find the missing number in each proportion.

35 2 : ___ = 8 : 12
36 3 : 5 = 6 : ___
37 1 : 3 = 8 : ___
38 1 : ___ = 5 : 25
39 5 : ___ = 20 : 32
40 2 : 3 = 12 : ___
41 3 : ___ = 6 : 14
42 5 : ___ = 35 : 42
43 3 : 7 = 9 : ___
44 3 : ___ = 24 : 64
45 5 : ___ = 10 : 16
46 1 : 3 = 4 : ___
47 3 : 7 = 21 : ___
48 4 : ___ = 28 : 35
49 1 : 4 = 6 : ___
50 5 : 6 = 30 : ___
51 3 : ___ = 6 : 8
52 2 : ___ = 16 : 40
53 3 : ___ = 12 : 16
54 4 : ___ = 20 : 25
55 1 : 3 = 5 : ___
56 1 : 3 = 7 : ___
57 3 : 7 = 15 : ___
58 1 : ___ = 8 : 16
59 5 : 6 = 25 : ___
60 1 : 6 = 3 : ___
61 1 : ___ = 8 : 48
62 3 : ___ = 18 : 24
63 3 : ___ = 21 : 56
64 5 : 6 = 20 : ___
65 5 : ___ = 40 : 48
66 3 : 8 = 6 : ___
67 1 : ___ = 2 : 4
68 3 : 7 = 24 : ___

Percent Problems

WORKED EXAMPLE

40% more than 115 = 161

6. Percent

Work out each new amount.

1. 25% more than 124 = ____
2. 20% more than 25 = ____
3. 50% more than 6 = ____
4. 80% more than 140 = ____
5. 80% more than 25 = ____
6. 40% more than 110 = ____
7. 10% more than 40 = ____
8. 60% more than 145 = ____
9. 50% more than 158 = ____
10. 80% more than 145 = ____
11. 20% more than 170 = ____
12. 60% more than 95 = ____
13. 40% more than 95 = ____
14. 80% more than 35 = ____
15. 10% more than 100 = ____
16. 75% more than 192 = ____
17. 20% more than 10 = ____
18. 75% more than 64 = ____
19. 25% more than 60 = ____
20. 40% more than 190 = ____
21. 75% more than 168 = ____
22. 20% more than 5 = ____
23. 50% more than 54 = ____
24. 40% more than 170 = ____
25. 60% more than 105 = ____
26. 75% more than 180 = ____
27. 50% more than 34 = ____
28. 50% more than 74 = ____
29. 25% more than 92 = ____
30. 20% more than 130 = ____
31. 75% more than 148 = ____
32. 10% more than 130 = ____
33. 80% more than 175 = ____
34. 25% more than 12 = ____
35. 25% more than 84 = ____
36. 60% more than 110 = ____
37. 20% more than 160 = ____
38. 20% more than 85 = ____
39. 10% more than 190 = ____
40. 10% more than 10 = ____
41. 50% more than 200 = ____
42. 50% more than 170 = ____
43. 50% more than 36 = ____
44. 50% more than 2 = ____

7. Add and subtract integers

Add or subtract the integers.

45. 27 − 30 = ____
46. 95 − 100 = ____
47. 11 − 45 = ____
48. 46 − 84 = ____
49. −74 + 78 = ____
50. 16 − 82 = ____
51. 31 − 84 = ____
52. −16 + 65 = ____
53. −45 + 89 = ____
54. −64 + 91 = ____

Decimal Operations

WORKED EXAMPLE

$12.0 \div 3 = 4.0$

8. Multiply and divide decimals

Multiply or divide the decimals.

1 $11.08 \div 2 =$ _____
2 $8.35 \times 1.7 =$ _____
3 $58.88 \div 8 =$ _____
4 $3.46 \times 8.63 =$ _____
5 $44.66 \div 11 =$ _____
6 $4.0 \times 4.50 =$ _____
7 $4.91 \times 4 =$ _____
8 $11.6 \times 10 =$ _____
9 $3.06 \times 3.81 =$ _____
10 $7.32 \times 6.1 =$ _____
11 $9.54 \div 2 =$ _____
12 $6.9 \times 7.91 =$ _____
13 $8.0 \times 2.69 =$ _____
14 $51.48 \div 6 =$ _____
15 $7.3 \times 2.7 =$ _____
16 $7.6 \times 5.6 =$ _____
17 $2.4 \times 2.7 =$ _____
18 $8.26 \times 6.34 =$ _____
19 $6.7 \times 4.34 =$ _____
20 $75.00 \div 12 =$ _____
21 $2.79 \times 8.7 =$ _____
22 $5.25 \times 3.41 =$ _____
23 $7.0 \times 5.3 =$ _____
24 $134.28 \div 12 =$ _____
25 $8.84 \times 0.78 =$ _____
26 $3.25 \times 6 =$ _____
27 $5.6 \times 7 =$ _____
28 $6.4 \times 4.13 =$ _____
29 $7.25 \times 5.08 =$ _____
30 $4.5 \times 7 =$ _____
31 $3.8 \times 4.37 =$ _____
32 $5.8 \times 3.4 =$ _____
33 $92.32 \div 8 =$ _____
34 $7.35 \times 2.3 =$ _____
35 $8.06 \times 1.4 =$ _____
36 $4.35 \times 8.88 =$ _____
37 $0.1 \times 4.94 =$ _____
38 $6.88 \times 3.7 =$ _____
39 $5.9 \times 2.9 =$ _____
40 $4.2 \times 0.7 =$ _____
41 $1.98 \times 6.7 =$ _____
42 $4.89 \times 2.26 =$ _____
43 $9.8 \times 10 =$ _____
44 $5.47 \times 9 =$ _____
45 $6.0 \times 7.18 =$ _____
46 $51.84 \div 12 =$ _____
47 $3.13 \times 5.72 =$ _____
48 $2.32 \times 6.16 =$ _____
49 $5.21 \times 5.1 =$ _____
50 $5.8 \times 9 =$ _____

9. Multiplying and dividing integers

Multiply or divide. Remember what two negative signs make.

51 $-70 \div (-7) =$ ____
52 $88 \div (-8) =$ ____
53 $-24 \div (-2) =$ ____
54 $-5 \times (-6) =$ ____
55 $-4 \times (-3) =$ ____
56 $80 \div (-10) =$ ____
57 $44 \div (-11) =$ ____
58 $-60 \div 10 =$ ____
59 $-9 \times (-7) =$ ____
60 $-10 \times (-5) =$ ____

Fraction Operations

WORKED EXAMPLE $\frac{6}{8} \times \frac{5}{6} = \frac{5}{8}$

10. Multiplying and dividing fractions

Multiply or divide. Write each answer in simplest form.

1 $\frac{5}{8} \div \frac{1}{8} =$ ___

2 $\frac{5}{6} \div \frac{1}{7} =$ ___

3 $\frac{6}{7} \times \frac{3}{6} =$ ___

4 $\frac{1}{5} \div \frac{3}{8} =$ ___

5 $\frac{5}{6} \div \frac{1}{3} =$ ___

6 $\frac{2}{4} \div \frac{5}{7} =$ ___

7 $\frac{7}{8} \times \frac{1}{6} =$ ___

8 $\frac{2}{3} \div \frac{6}{7} =$ ___

9 $\frac{1}{7} \div \frac{1}{6} =$ ___

10 $\frac{3}{6} \times \frac{1}{4} =$ ___

11 $\frac{1}{8} \div \frac{5}{8} =$ ___

12 $\frac{1}{3} \div \frac{4}{8} =$ ___

13 $\frac{6}{8} \times \frac{4}{6} =$ ___

14 $\frac{1}{8} \div \frac{3}{5} =$ ___

15 $\frac{4}{8} \times \frac{3}{5} =$ ___

16 $\frac{3}{8} \div \frac{6}{7} =$ ___

17 $\frac{2}{5} \div \frac{3}{8} =$ ___

18 $\frac{1}{4} \times \frac{4}{8} =$ ___

19 $\frac{7}{8} \div \frac{3}{7} =$ ___

20 $\frac{3}{6} \div \frac{1}{2} =$ ___

21 $\frac{1}{2} \times \frac{2}{4} =$ ___

22 $\frac{2}{8} \div \frac{1}{5} =$ ___

23 $\frac{2}{7} \div \frac{1}{2} =$ ___

24 $\frac{1}{4} \times \frac{1}{8} =$ ___

25 $\frac{3}{5} \div \frac{4}{6} =$ ___

26 $\frac{3}{7} \div \frac{2}{5} =$ ___

27 $\frac{3}{5} \times \frac{4}{7} =$ ___

28 $\frac{4}{6} \div \frac{6}{8} =$ ___

29 $\frac{4}{6} \div \frac{1}{4} =$ ___

30 $\frac{4}{6} \times \frac{3}{8} =$ ___

31 $\frac{3}{5} \div \frac{1}{2} =$ ___

32 $\frac{3}{4} \div \frac{2}{7} =$ ___

33 $\frac{3}{6} \times \frac{4}{8} =$ ___

34 $\frac{1}{6} \div \frac{1}{8} =$ ___

35 $\frac{6}{7} \div \frac{1}{7} =$ ___

36 $\frac{4}{6} \times \frac{3}{6} =$ ___

37 $\frac{4}{5} \div \frac{1}{8} =$ ___

38 $\frac{7}{8} \div \frac{2}{4} =$ ___

39 $\frac{7}{8} \times \frac{3}{5} =$ ___

40 $\frac{7}{8} \div \frac{4}{7} =$ ___

41 $\frac{2}{5} \times \frac{2}{8} =$ ___

42 $\frac{4}{5} \div \frac{2}{3} =$ ___

43 $\frac{1}{4} \div \frac{5}{7} =$ ___

44 $\frac{3}{6} \times \frac{1}{5} =$ ___

11. Unit rates

Find the unit rate for each.

45 \$45 for 5 = ___ each

46 \$12 for 3 = ___ each

47 \$24 for 4 = ___ each

48 \$9 for 3 = ___ each

49 \$8 for 4 = ___ each

50 \$24 for 6 = ___ each

51 \$18 for 3 = ___ each

52 \$28 for 4 = ___ each

53 \$40 for 5 = ___ each

54 \$96 for 8 = ___ each

Like Terms and the Distributive Property

WORKED EXAMPLE

7 + 3x + 6 + 2x

3 + 2 = 5
7 + 6 = 13
5x + 13

12. Collect like terms

Collect the like terms.

1 **10x + 12 − 8x − 5**

2 **12x + 9 − 8x − 2**

3 **8x + 2 − 4x − 1**

4 **12x + 8 − 3x − 1**

5 **8 + 5x + 8 + 5x**

6 **7x + 18 − 6x − 1**

7 **10x + 15 − 7x − 2**

8 **9x + 9 − 4x − 4**

9 **11x + 18 − 9x − 4**

10 **6x + 11 − x − 5**

11 **5x + 17 − 4x − 14**

12 **9x + 12 − 2x − 3**

13 **10x + 19 − x − 10**

14 **4x + 15 − x − 13**

15 **4x + 17 − x − 8**

16 **11x + 13 − 5x − 5**

13. Multiply out brackets

Multiply out each bracket.

17 $4(4x - 9)$

18 $5(9x + 7)$

19 $7(7x + 2)$

20 $7(3 + 5x)$

21 $2(7 + 8x)$

22 $8(4 + 5x)$

23 $5(8x + 7)$

24 $5(8x + 5)$

25 $4(10 + 5x)$

26 $3(9 + 6x)$

27 $3(5 + 5x)$

28 $9(5x - 4)$

29 $7(4 + 6x)$

30 $5(2 + 5x)$

31 $5(8x - 6)$

32 $6(8 + 6x)$

Solving Equations

WORKED EXAMPLE

$5x + 17 = 22$ 1

14. Solving equations

Solve each equation for x.

1 $5x - 20 = 5$ ___
2 $3x + 5 = 32$ ___
3 $5x + 23 = 48$ ___
4 $2x + 17 = 47$ ___
5 $4x + 20 = 40$ ___
6 $3x + 1 = 34$ ___
7 $2x - 25 = 23$ ___
8 $5x + 15 = 50$ ___
9 $4x - 9 = 39$ ___
10 $3x + 7 = 37$ ___
11 $7x + 6 = 41$ ___
12 $3x - 24 = 9$ ___
13 $2x - 17 = 17$ ___
14 $6x - 37 = 5$ ___
15 $2x - 33 = 11$ ___
16 $4x + 6 = 46$ ___
17 $3x + 3 = 18$ ___
18 $5x - 2 = 43$ ___
19 $2x + 8 = 42$ ___
20 $3x + 9 = 27$ ___
21 $2x - 21 = 27$ ___
22 $4x - 9 = 27$ ___
23 $2x + 1 = 35$ ___
24 $4x - 7 = 21$ ___
25 $3x - 18 = 9$ ___
26 $2x - 12 = 30$ ___
27 $2x + 5 = 19$ ___
28 $2x - 26 = 12$ ___
29 $2x - 21 = 5$ ___
30 $5x - 9 = 26$ ___
31 $5x - 15 = 35$ ___
32 $5x - 27 = 18$ ___
33 $7x - 5 = 30$ ___
34 $2x - 5 = 17$ ___
35 $2x - 37 = 9$ ___
36 $2x - 9 = 9$ ___
37 $6x + 1 = 49$ ___
38 $4x - 27 = 13$ ___
39 $3x + 1 = 46$ ___
40 $6x - 24 = 12$ ___
41 $3x - 24 = 24$ ___
42 $3x + 12 = 45$ ___
43 $3x + 7 = 31$ ___
44 $5x - 45 = 5$ ___
45 $2x - 27 = 5$ ___
46 $3x - 11 = 7$ ___
47 $2x - 35 = 9$ ___
48 $3x - 35 = 10$ ___
49 $2x + 1 = 31$ ___
50 $6x + 1 = 31$ ___

15. Percent

Work out each new amount.

51 10% more than 120 = _____
52 20% more than 25 = _____
53 80% more than 20 = _____
54 50% more than 24 = _____
55 10% more than 20 = _____
56 25% more than 136 = _____
57 60% more than 20 = _____
58 60% more than 170 = _____
59 60% more than 40 = _____
60 50% more than 132 = _____

Inequalities

WORKED EXAMPLE

$2x + 6 \leq -14 \quad x \boxed{\leq} -10$

$-14 - 6 = -20$
$-20 \div 2 = -10$
$x \leq -10$

16. Inequalities

Solve each one, then write >, <, ≥ or ≤ in the box.

1 $-5x + 2 > -23 \quad x \boxed{} 5$

2 $-8x + 1 \geq 97 \quad x \boxed{} -12$

3 $-8x + 6 < -34 \quad x \boxed{} 5$

4 $-7x + 10 \leq -53 \quad x \boxed{} 9$

5 $2x + 9 > 77 \quad x \boxed{} 34$

6 $-8x + 8 \geq -80 \quad x \boxed{} 11$

7 $-3x + 2 > -73 \quad x \boxed{} 25$

8 $-3x + 5 > -10 \quad x \boxed{} 5$

9 $-2x + 7 \leq 57 \quad x \boxed{} -25$

10 $-2x + 4 \leq -82 \quad x \boxed{} 43$

11 $2x + 1 \geq -69 \quad x \boxed{} -35$

12 $-2x + 4 < 28 \quad x \boxed{} -12$

16. Inequalities (continued)

Solve each one, then write >, <, ≥ or ≤ in the box.

13 $-3x + 10 > 94$ x ☐ -28

14 $-9x + 10 \geq -44$ x ☐ 6

15 $-3x + 12 \leq -21$ x ☐ 11

16 $-2x + 4 \leq 34$ x ☐ -15

17 $-5x + 12 > -13$ x ☐ 5

18 $-5x + 5 > -45$ x ☐ 10

19 $-2x + 3 > 53$ x ☐ -25

20 $-5x + 1 \leq -19$ x ☐ 4

21 $-6x + 6 < -54$ x ☐ 10

22 $-7x + 10 \leq -74$ x ☐ 12

23 $-3x + 9 \geq 69$ x ☐ -20

24 $2x + 5 \leq -39$ x ☐ -22

17. Multiply and divide decimals

Multiply or divide the decimals.

25 $19.50 \div 2 =$ _____

26 $5.8 \times 3.4 =$ _____

27 $5.8 \times 9 =$ _____

28 $8.17 \times 2.4 =$ _____

29 $20.66 \div 2 =$ _____

30 $7.35 \times 2.3 =$ _____

31 $8.38 \times 8.4 =$ _____

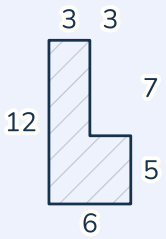
32 $42.66 \div 6 =$ _____

33 $4.76 \times 7.1 =$ _____

34 $2.70 \times 5.6 =$ _____

Area of Composite Shapes

WORKED EXAMPLE

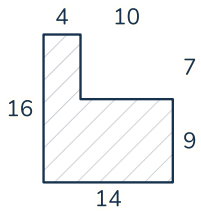


51 cm²

18. Area of composite figures

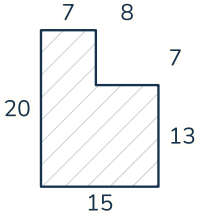
Find the area of each figure. All lengths are in centimeters.

1



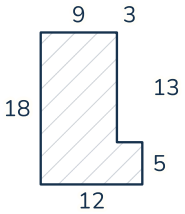
_____ cm²

2



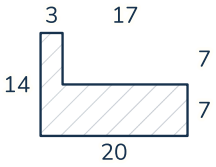
_____ cm²

3



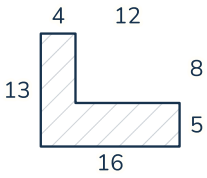
_____ cm²

4



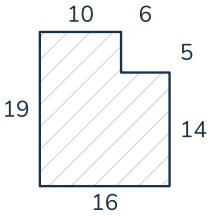
_____ cm²

5



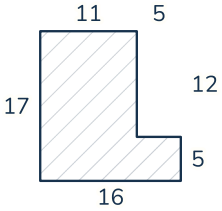
_____ cm²

6



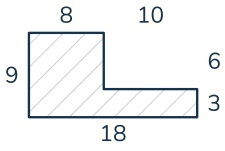
_____ cm²

7



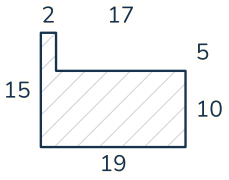
_____ cm²

8



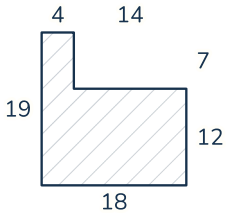
_____ cm²

9



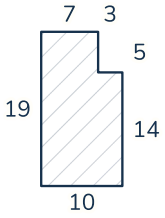
_____ cm²

10



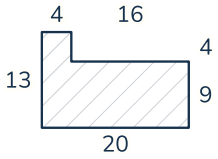
_____ cm²

11



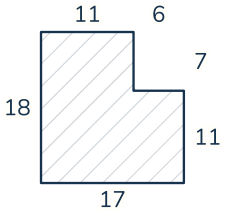
_____ cm²

12



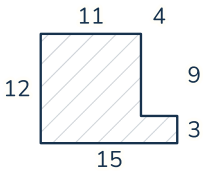
_____ cm²

13



_____ cm²

14



_____ cm²

19. Multiplying and dividing fractions

Multiply or divide. Write each answer in simplest form.

15 $\frac{2}{3} \div \frac{3}{5} = \_\_$

16 $\frac{5}{8} \div \frac{4}{5} = \_\_$

17 $\frac{5}{6} \times \frac{1}{2} = \_\_$

18 $\frac{1}{5} \div \frac{6}{7} = \_\_$

19 $\frac{1}{6} \div \frac{1}{5} = \_\_$

20 $\frac{2}{6} \div \frac{1}{5} = \_\_$

21 $\frac{5}{6} \times \frac{1}{8} = \_\_$

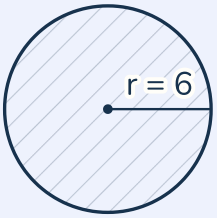
22 $\frac{2}{3} \div \frac{2}{3} = \_\_$

23 $\frac{2}{5} \div \frac{2}{5} = \_\_$

24 $\frac{1}{8} \times \frac{2}{6} = \_\_$

Area of a Circle

WORKED EXAMPLE

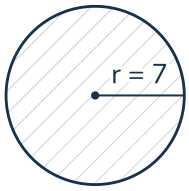


113.04 cm²

20. Area of a circle

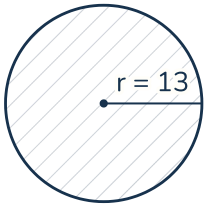
Find the area of each circle. Use π = 3.14.

1



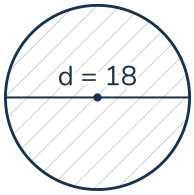
_____ cm²

2



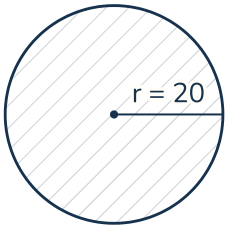
_____ cm²

3



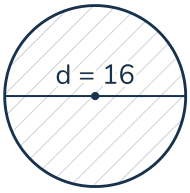
_____ cm²

4



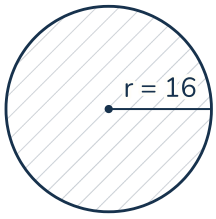
_____ cm²

5



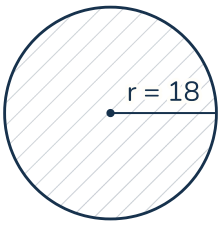
_____ cm²

6



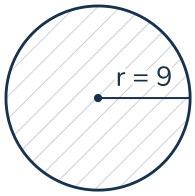
_____ cm²

7



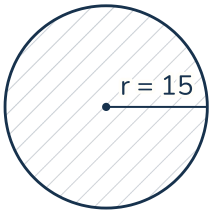
_____ cm²

8



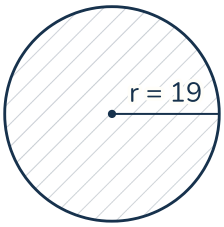
_____ cm²

9



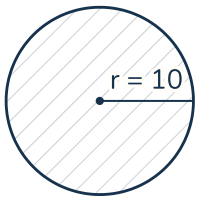
_____ cm²

10



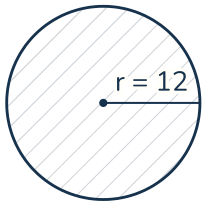
_____ cm²

11



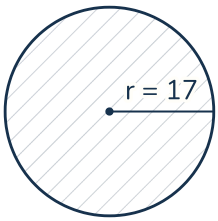
_____ cm²

12



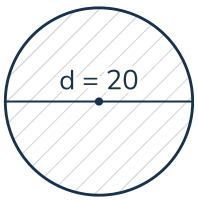
_____ cm²

13



_____ cm²

14



_____ cm²

21. Multiply out brackets

Multiply out each bracket.

15 $3(7x + 11)$

16 $4(6x - 8)$

17 $2(7 + 5x)$

18 $7(7x + 3)$

19 $5(4x - 6)$

20 $5(9x - 6)$

21 $5(9 + 8x)$

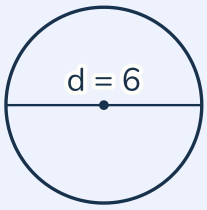
22 $4(5x + 10)$

23 $4(8x + 12)$

24 $6(8x - 3)$

Circumference

WORKED EXAMPLE

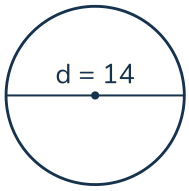


18.84 cm

22. Circumference of a circle

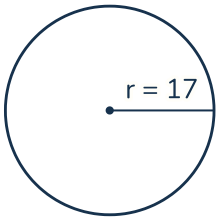
Find the circumference of each circle. Use π = 3.14.

1



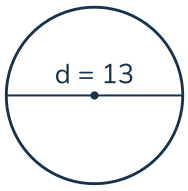
_____ cm

2



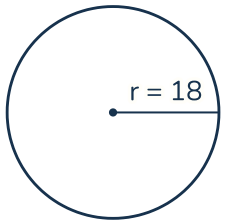
_____ cm

3



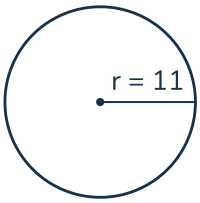
_____ cm

4



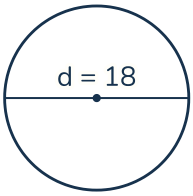
_____ cm

5



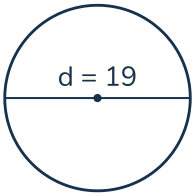
_____ cm

6



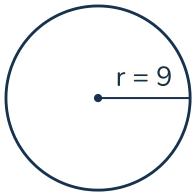
_____ cm

7



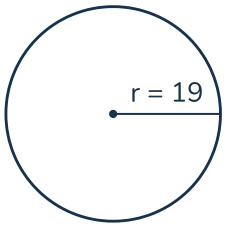
_____ cm

8



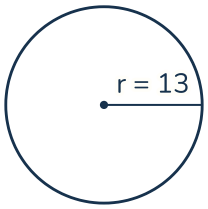
_____ cm

9



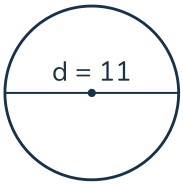
_____ cm

10



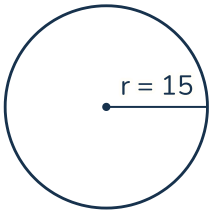
_____ cm

11



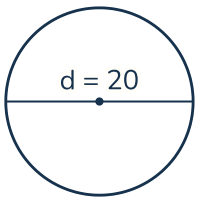
_____ cm

12



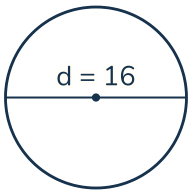
_____ cm

13



_____ cm

14



_____ cm

23. Collect like terms

Collect the like terms.

15 $12 + 5x + 6 + 5x$

16 $9x + 10 - 4x - 4$

17 $5x + 17 - 3x - 10$

18 $12x + 14 - 8x - 1$

19 $6x + 14 - 4x - 10$

20 $7x + 15 - x - 5$

21 $10x + 16 - 5x - 1$

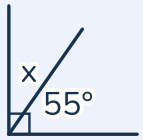
22 $9x + 10 - 7x - 4$

23 $11x + 14 - 2x - 6$

24 $7x + 20 - 5x - 7$

Angle Pairs

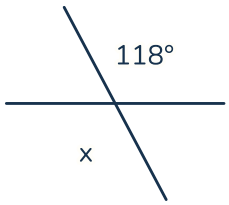
WORKED EXAMPLE



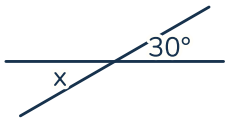
35 degrees

24. Missing angles in a pair

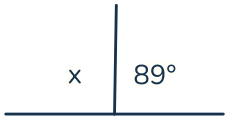
Find the angle marked x. Give each answer in degrees.

1


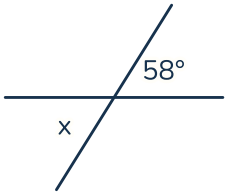
_____ degrees

2


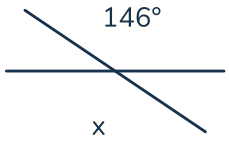
_____ degrees

3


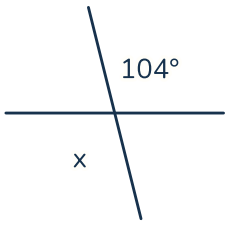
_____ degrees

4


_____ degrees

5


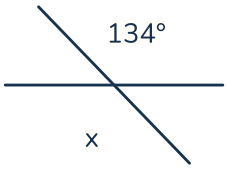
_____ degrees

6


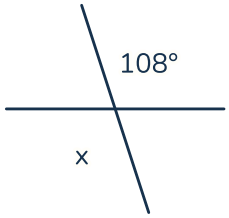
_____ degrees

7


_____ degrees

8


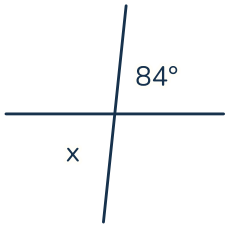
_____ degrees

9


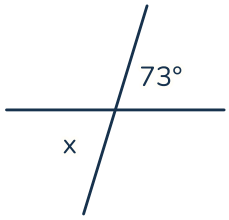
_____ degrees

10


_____ degrees

11


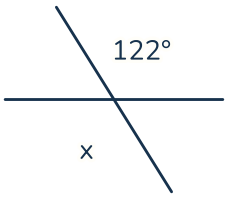
_____ degrees

12


_____ degrees

13


_____ degrees

14


_____ degrees

25. Solving equations

Solve each equation for x.

15 $2x + 30 = 42$ ___

16 $2x - 23 = 21$ ___

17 $3x + 11 = 29$ ___

18 $5x - 17 = 33$ ___

19 $6x + 5 = 47$ ___

20 $3x + 11 = 50$ ___

21 $3x - 5 = 37$ ___

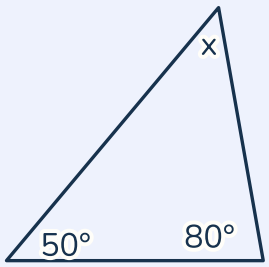
22 $2x - 11 = 3$ ___

23 $2x - 2 = 38$ ___

24 $4x - 28 = 12$ ___

Angles in a Triangle

WORKED EXAMPLE



50 degrees

26. The third angle of a triangle

Find the angle marked x. Give each answer in degrees.

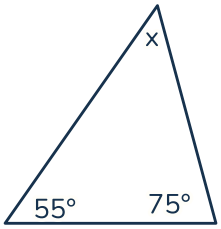
1

_____ degrees

2

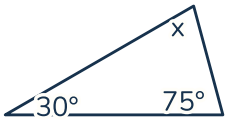
_____ degrees

3



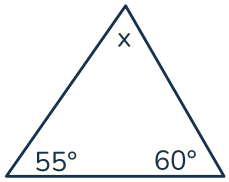
_____ degrees

4



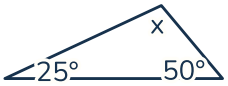
_____ degrees

5



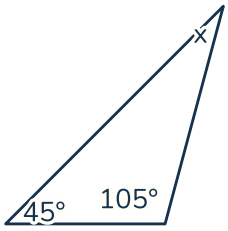
_____ degrees

6



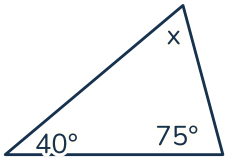
_____ degrees

7



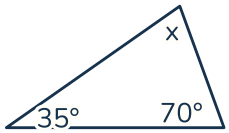
_____ degrees

8



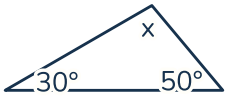
_____ degrees

9



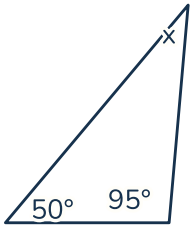
_____ degrees

10



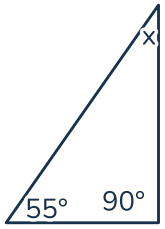
_____ degrees

11



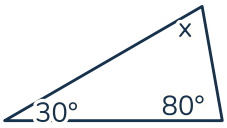
_____ degrees

12



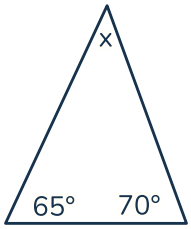
_____ degrees

13



_____ degrees

14



_____ degrees

27. Inequalities

Solve each one, then write >, <, ≥ or ≤ in the box.

15 $-9x + 10 < 28 \quad x \square -2$

16 $-5x + 3 < 98 \quad x \square -19$

17 $-4x + 1 \geq -7 \quad x \square 2$

18 $-2x + 8 < 38 \quad x \square -15$

19 $-6x + 2 < -4 \quad x \square 1$

20 $-9x + 12 > 93 \quad x \square -9$

21 $-2x + 6 > 50 \quad x \square -22$

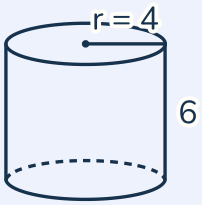
22 $3x + 5 \geq 74 \quad x \square 23$

23 $-2x + 5 > 37 \quad x \square -16$

24 $-7x + 10 \leq 73 \quad x \square -9$

Volume of Cylinders

WORKED EXAMPLE

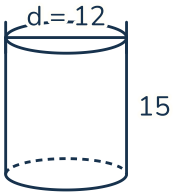


301.44

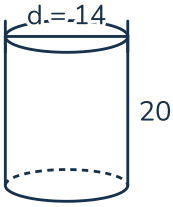
28. Volume of a cylinder

Find the volume of each cylinder. Use π = 3.14.

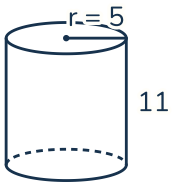
1



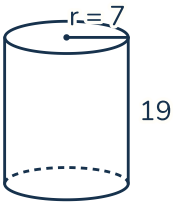
2



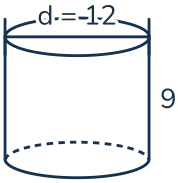
3



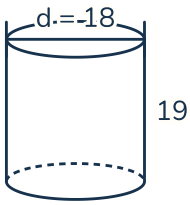
4



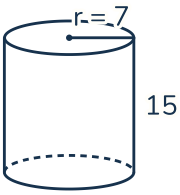
5



6



7



29. Add and subtract integers

Add or subtract the integers.

8 $-70 + 77 =$ _____

9 $23 - 68 =$ _____

10 $-21 + 55 =$ _____

11 $72 - 86 =$ _____

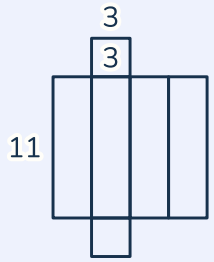
12 $42 - 51 =$ _____

13 $-75 + 89 =$ _____

14 $55 - 73 =$ _____

Surface Area

WORKED EXAMPLE

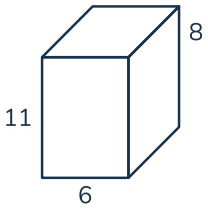


150 cm²

30. Surface area of a box

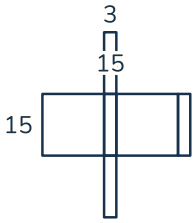
Find the surface area of each box. All lengths are in centimeters.

1



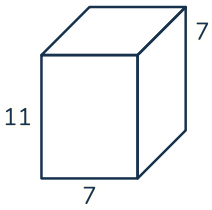
_____ cm²

2



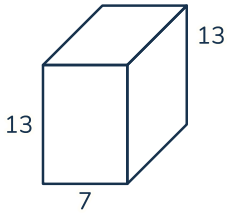
_____ cm²

3



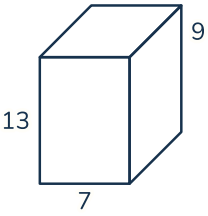
_____ cm²

4



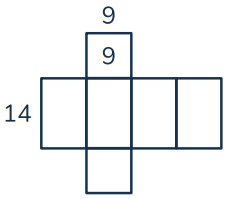
_____ cm²

5



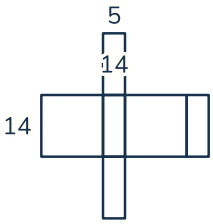
_____ cm²

6



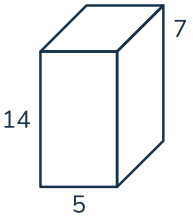
_____ cm²

7



_____ cm²

8



_____ cm²

31. Multiplying and dividing integers

Multiply or divide. Remember what two negative signs make.

9 $-54 \div 9 =$ _____

10 $33 \div (-3) =$ _____

11 $12 \times (-12) =$ _____

12 $-7 \times (-12) =$ _____

13 $-72 \div 8 =$ _____

14 $35 \div (-5) =$ _____

15 $110 \div (-10) =$ _____

16 $-99 \div 11 =$ _____

Similar Figures

WORKED EXAMPLE

8 cm

32. Similar figures and scale

Each pair of shapes is the same shape at two sizes. Find the missing length.

1

_____ cm

2

_____ cm

3

_____ cm

4

_____ cm

5

_____ cm

6

_____ cm

7

_____ cm

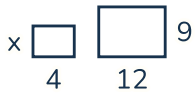
8

_____ cm

9

_____ cm

10



_____ cm

33. Unit rates

Find the unit rate for each.

11 **$24 for 4 = ___ each**

12 **$9 for 3 = ___ each**

13 **$24 for 6 = ___ each**

14 **$28 for 4 = ___ each**

15 **$55 for 5 = ___ each**

16 **$18 for 2 = ___ each**

17 **$35 for 7 = ___ each**

18 **$56 for 7 = ___ each**

19 **$77 for 7 = ___ each**

20 **$25 for 5 = ___ each**

Probability

WORKED EXAMPLE

2 red, 5 blue, 5 green P(red) **1/6**

$2 + 5 + 5 = 12$

red: 2

$\frac{2}{12} = \frac{1}{6}$

34. Probability of one event

Each bag holds these counters. Simplest form, and watch for NOT.

1 **2 red, 8 blue, 2 green** P(not blue) _____

2 **2 red, 4 blue, 6 green** P(not red) _____

3 **5 red, 3 blue, 4 green** P(green) _____

4 **5 red, 3 blue, 4 green** P(not blue) _____

5 **3 red, 9 blue** P(blue) _____

6 **6 red, 3 blue, 3 green** P(not blue) _____

7 **8 red, 2 blue, 2 green** P(red) _____

8 **5 red, 4 blue, 3 green** P(blue) _____

9 **2 red, 6 blue, 4 green** P(not red) _____

10 **7 red, 3 blue, 2 green** P(not blue) _____

11 **4 red, 4 blue, 4 green** P(green) _____

12 **2 red, 7 blue, 3 green** P(not red) _____

13 **7 red, 3 blue, 2 green** P(not green) _____

14 **7 red, 2 blue, 3 green** P(red) _____

34. Probability of one event (continued)

Each bag holds these counters. Simplest form, and watch for NOT.

15 3 red, 3 blue, 6 green P(not red) _____

16 5 red, 4 blue, 3 green P(not blue) _____

17 4 red, 3 blue, 5 green P(red) _____

18 8 red, 2 blue, 2 green P(not blue) _____

19 6 red, 4 blue, 2 green P(not green) _____

20 5 red, 5 blue, 2 green P(not red) _____

21 3 red, 2 blue, 7 green P(not red) _____

22 4 red, 3 blue, 5 green P(not blue) _____

23 3 red, 7 blue, 2 green P(not green) _____

24 3 red, 2 blue, 7 green P(green) _____

35. Percent

Work out each new amount.

25 25% more than 24 = _____

26 80% more than 110 = _____

27 50% more than 32 = _____

28 5% more than 100 = _____

29 25% more than 52 = _____

30 75% more than 164 = _____

31 75% more than 88 = _____

32 40% more than 20 = _____

33 25% more than 144 = _____

34 5% more than 180 = _____

Probability Word Problems

WORKED EXAMPLE

A bag holds 2 yellow and 8 green chips. One is taken out without looking.

What is the probability it is yellow? Write your answer in simplest form.

ANSWER: **2 out of 10 = 1/5**

36. Word problems: probability

Read each problem. Write the answer.

1 A jar contains 2 green and 6 yellow beads. One bead is drawn at random.

What is the probability of NOT getting a green bead? Write your answer in simplest form.

2 A box contains 2 red and 6 yellow tickets. One ticket is drawn at random.

What is the probability of NOT getting a red ticket? Write your answer in simplest form.

3 A bag contains 5 yellow and 7 green marbles. One marble is picked at random.

What is the probability of getting a yellow marble? Write your answer in simplest form.

4 A bag contains 6 blue and 2 yellow marbles. One marble is picked at random.

What is the probability of getting a blue marble? Write your answer in simplest form.

5 A jar has 2 green buttons and 4 yellow buttons. One button is picked at random.

What is the probability that it is NOT green? Write your answer in simplest form.

6 A jar holds 3 green and 9 yellow beads. One is taken out without looking.

What is the probability it is NOT green? Write your answer in simplest form.

37. Multiply and divide decimals

Multiply or divide the decimals.

7 $5.5 \times 5 =$ _____

8 $4.1 \times 7.9 =$ _____

9 $22.26 \div 2 =$ _____

10 $3.17 \times 6.9 =$ _____

11 $18.28 \div 2 =$ _____

12 $6.0 \times 7.18 =$ _____

Mean, Median and Mode

WORKED EXAMPLE

Range
10, 20, 26, 26, 18
26 − 10 = 16
16

38. Mean, median, mode and range

Find the statistic named beside each set of numbers.

1 **Median**
23, 12, 36, 23, 6

2 **Mean**
39, 43, 33, 39, 46

3 **Mode**
20, 18, 35, 42, 35

4 **Mode**
21, 47, 7, 38, 7

5 **Mean**
38, 38, 13, 41, 15

6 **Mean**
44, 29, 21, 2, 29

7 **Range**
49, 46, 26, 3, 46

8 **Mean**
41, 41, 26, 25, 32

9 **Mean**
19, 20, 49, 31, 31

10 **Mean**
5, 12, 46, 5, 42

11 **Median**
6, 19, 20, 41, 19

12 **Mode**
24, 25, 31, 25, 50

13 **Median**
1, 29, 30, 46, 29

14 **Mode**
17, 41, 22, 17, 18

38. Mean, median, mode and range (continued)

Find the statistic named beside each set of numbers.

15 **Mode**
49, 49, 7, 8, 42

___

16 **Mean**
4, 44, 26, 17, 44

___

17 **Range**
34, 8, 8, 42, 33

___

18 **Mean**
21, 47, 7, 38, 7

___

19 **Range**
42, 50, 20, 31, 42

___

20 **Mode**
23, 20, 13, 39, 20

___

21 **Median**
47, 8, 3, 29, 3

___

22 **Mean**
40, 47, 3, 17, 3

___

23 **Median**
42, 50, 20, 31, 42

___

24 **Median**
31, 40, 22, 26, 26

___

39. Multiplying and dividing fractions

Multiply or divide. Write each answer in simplest form.

25 $\frac{1}{8} \div \frac{4}{7} = \_\_$

26 $\frac{1}{7} \div \frac{2}{6} = \_\_$

27 $\frac{7}{8} \times \frac{4}{7} = \_\_$

28 $\frac{2}{8} \div \frac{7}{8} = \_\_$

29 $\frac{7}{8} \div \frac{2}{3} = \_\_$

30 $\frac{2}{5} \div \frac{1}{7} = \_\_$

31 $\frac{1}{5} \times \frac{2}{8} = \_\_$

32 $\frac{1}{6} \div \frac{5}{8} = \_\_$

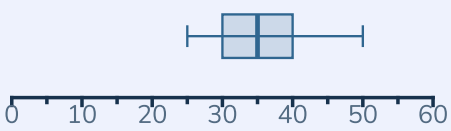
33 $\frac{3}{7} \div \frac{3}{7} = \_\_$

34 $\frac{2}{5} \times \frac{1}{2} = \_\_$

Box Plots

WORKED EXAMPLE

Rainfall each week (mm)



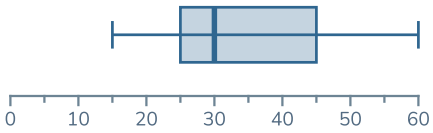
What is the median?

35

40. Box plots

Read each box plot and answer the question.

Height of the sunflowers (cm)



1 What is the largest value?

___

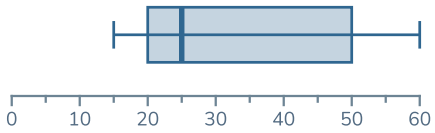
2 What is the lower quartile?

___

3 What is the upper quartile?

___

Minutes of homework (minutes)



4 What is the median?

___

41. Multiply out brackets

Multiply out each bracket.

5 $2(8 + 6x)$

6 $7(6x - 2)$

7 $4(3x - 8)$

8 $8(5x - 5)$

Check the Working

42. Check the working

Read each line of working and choose the answer that is correct.

1 **Noor says 4(x + 5) + 3(x + 7) comes to 7x + 41. Which is correct?**

7x + 420 | 7x + 41 | 7x + 26 | 5x + 27

Why? .....

2 **Priya's answer to 4(x + 8) + 6(x + 8) is 10x + 80. Which is correct?**

10x + 1536 | 10x + 56 | 10x + 80 | 5x + 40

Why? .....

3 **Ben says 5(x + 6) + 3(x + 5) comes to 8x + 45. Which is correct?**

8x + 45 | 8x + 21 | 6x + 35 | 8x + 450

Why? .....

4 **Sam's answer to 5(x + 6) + 2(x + 5) is 7x + 40. Which is correct?**

7x + 16 | 7x + 40 | 7x + 300 | 6x + 35

Why? .....

5 **Check this line: 4(x + 7) + 6(x + 8) = 10x + 1344. Which is correct?**

10x + 1344 | 10x + 76 | 5x + 36 | 10x + 55

Why? .....

6 **On Priya's paper: 4(x + 4) + 2(x + 3) = 6x + 10. Which line should replace it?**

6x + 96 | 6x + 10 | 6x + 22 | 5x + 19

Why? .....

7 **Spot the mistake: 5(x + 6) + 5(x + 5) = 6x + 35. Which answer is right?**

10x + 750 | 10x + 31 | 10x + 55 | 6x + 35

Why? .....

8 **Check this line: 3(x + 5) + 6(x + 7) = 9x + 630. Which is correct?**

9x + 57 | 9x + 630 | 4x + 22 | 9x + 47

Why? .....

Answer Key (1 of 9)

Positive and Negative Numbers

Add and subtract integers

1. −87 + 78 = −9
2. 68 − 72 = −4
3. −1 + 69 = 68
4. −84 + 92 = 8
5. −47 + 73 = 26
6. 3 − 67 = −64
7. −5 + 94 = 89
8. 29 − 45 = −16
9. 11 − 70 = −59
10. −63 + 100 = 37
11. 30 − 57 = −27
12. −76 + 99 = 23
13. −59 + 93 = 34
14. −55 + 61 = 6
15. 19 − 94 = −75
16. 9 − 73 = −64
17. −63 + 49 = −14
18. −84 + 96 = 12
19. 24 − 100 = −76
20. −45 + 66 = 21
21. −58 + 89 = 31
22. 5 − 88 = −83
23. 1 − 83 = −82
24. −100 + 64 = −36
25. −61 + 86 = 25
26. 27 − 98 = −71
27. −80 + 63 = −17
28. −14 + 95 = 81
29. 12 − 75 = −63
30. 3 − 52 = −49
31. −55 + 87 = 32
32. 47 − 82 = −35
33. 39 − 40 = −1
34. −73 + 89 = 16
35. 72 − 80 = −8
36. 94 − 96 = −2
37. −92 + 76 = −16
38. 3 − 84 = −81
39. 90 − 96 = −6
40. 21 − 48 = −27
41. −89 + 89 = 0
42. −43 + 100 = 57
43. 0 − 45 = −45
44. 46 − 73 = −27
45. −81 + 86 = 5
46. 22 − 34 = −12

Positive and Negative Numbers (continued)

Add and subtract integers (continued)

47. 24 − 62 = −38
48. 92 − 95 = −3
49. 23 − 90 = −67
50. 16 − 30 = −14

Multiplying and Dividing Integers

Multiplying and dividing integers

1. −12 × 10 = −120
2. −6 × −5 = 30
3. −11 × 11 = −121
4. 20 ÷ −4 = −5
5. −40 ÷ −5 = 8
6. 70 ÷ −10 = −7
7. 56 ÷ −8 = −7
8. −12 × 9 = −108
9. 49 ÷ −7 = −7
10. −5 × −12 = 60
11. 11 × −5 = −55
12. −4 × −8 = 32
13. −7 × −9 = 63
14. −10 × 8 = −80
15. −5 × −9 = 45
16. −4 × −7 = 28
17. −6 × −2 = 12
18. −10 × −8 = 80
19. −7 × −10 = 70
20. 9 × −6 = −54
21. 63 ÷ −7 = −9
22. 88 ÷ −8 = −11
23. −12 × −4 = 48
24. −88 ÷ −8 = 11

Add and subtract integers

25. −88 + 77 = −11
26. 39 − 64 = −25
27. −82 + 56 = −26
28. −46 + 95 = 49
29. −7 + 61 = 54
30. 58 − 94 = −36
31. −69 + 94 = 25
32. 5 − 27 = −22
33. 46 − 85 = −39
34. 83 − 100 = −17
35. 12 − 35 = −23
36. 13 − 83 = −70
37. 32 − 82 = −50
38. −57 + 68 = 11

Answer Key (2 of 9)

Multiplying and Dividing Integers (continued)

Add and subtract integers (continued)

39. 1 − 85 = −84
40. 76 − 92 = −16
41. −45 + 51 = 6
42. 11 − 77 = −66
43. 36 − 78 = −42
44. −43 + 53 = 10
45. 63 − 82 = −19
46. 37 − 66 = −29
47. −35 + 91 = 56
48. −6 + 67 = 61

Ratio and Proportion

Unit rates

1. $45 for 5 = $9 each
2. $42 for 6 = $7 each
3. $12 for 3 = $4 each
4. $24 for 4 = $6 each
5. $9 for 3 = $3 each
6. $8 for 4 = $2 each
7. $24 for 6 = $4 each
8. $18 for 3 = $6 each
9. $28 for 4 = $7 each
10. $55 for 5 = $11 each
11. $40 for 5 = $8 each
12. $35 for 7 = $5 each
13. $21 for 7 = $3 each
14. $56 for 7 = $8 each
15. $80 for 8 = $10 each
16. $50 for 5 = $10 each
17. $66 for 6 = $11 each
18. $12 for 2 = $6 each
19. $15 for 5 = $3 each
20. $15 for 3 = $5 each
21. $6 for 2 = $3 each
22. $20 for 2 = $10 each
23. $22 for 2 = $11 each
24. $20 for 5 = $4 each
25. $32 for 8 = $4 each
26. $14 for 7 = $2 each
27. $36 for 3 = $12 each
28. $27 for 3 = $9 each
29. $63 for 7 = $9 each
30. $54 for 6 = $9 each
31. $48 for 6 = $8 each
32. $8 for 2 = $4 each
33. $33 for 3 = $11 each

Ratio and Proportion (continued)

Unit rates (continued)

34. $48 for 8 = $6 each

Proportions

35. 2 : 3 = 8 : 12
36. 3 : 5 = 6 : 10
37. 1 : 3 = 8 : 24
38. 1 : 5 = 5 : 25
39. 5 : 8 = 20 : 32
40. 2 : 3 = 12 : 18
41. 3 : 7 = 6 : 14
42. 5 : 6 = 35 : 42
43. 3 : 7 = 9 : 21
44. 3 : 8 = 24 : 64
45. 5 : 8 = 10 : 16
46. 1 : 3 = 4 : 12
47. 3 : 7 = 21 : 49
48. 4 : 5 = 28 : 35
49. 1 : 4 = 6 : 24
50. 5 : 6 = 30 : 36
51. 3 : 4 = 6 : 8
52. 2 : 5 = 16 : 40
53. 3 : 4 = 12 : 16
54. 4 : 5 = 20 : 25
55. 1 : 3 = 5 : 15
56. 1 : 3 = 7 : 21
57. 3 : 7 = 15 : 35
58. 1 : 2 = 8 : 16
59. 5 : 6 = 25 : 30
60. 1 : 6 = 3 : 18
61. 1 : 6 = 8 : 48
62. 3 : 4 = 18 : 24
63. 3 : 8 = 21 : 56
64. 5 : 6 = 20 : 24
65. 5 : 6 = 40 : 48
66. 3 : 8 = 6 : 16
67. 1 : 2 = 2 : 4
68. 3 : 7 = 24 : 56

Percent Problems

Percent

1. 25% more than 124 = 155
2. 20% more than 25 = 30
3. 50% more than 6 = 9
4. 80% more than 140 = 252
5. 80% more than 25 = 45
6. 40% more than 110 = 154
7. 10% more than 40 = 44

Answer Key (3 of 9)

Percent Problems (continued)

Percent (continued)

8. 60% more than 145 = 232
9. 50% more than 158 = 237
10. 80% more than 145 = 261
11. 20% more than 170 = 204
12. 60% more than 95 = 152
13. 40% more than 95 = 133
14. 80% more than 35 = 63
15. 10% more than 100 = 110
16. 75% more than 192 = 336
17. 20% more than 10 = 12
18. 75% more than 64 = 112
19. 25% more than 60 = 75
20. 40% more than 190 = 266
21. 75% more than 168 = 294
22. 20% more than 5 = 6
23. 50% more than 54 = 81
24. 40% more than 170 = 238
25. 60% more than 105 = 168
26. 75% more than 180 = 315
27. 50% more than 34 = 51
28. 50% more than 74 = 111
29. 25% more than 92 = 115
30. 20% more than 130 = 156
31. 75% more than 148 = 259
32. 10% more than 130 = 143
33. 80% more than 175 = 315
34. 25% more than 12 = 15
35. 25% more than 84 = 105
36. 60% more than 110 = 176
37. 20% more than 160 = 192
38. 20% more than 85 = 102
39. 10% more than 190 = 209
40. 10% more than 10 = 11
41. 50% more than 200 = 300
42. 50% more than 170 = 255
43. 50% more than 36 = 54
44. 50% more than 2 = 3

Add and subtract integers

45. 27 − 30 = −3
46. 95 − 100 = −5
47. 11 − 45 = −34
48. 46 − 84 = −38
49. −74 + 78 = 4
50. 16 − 82 = −66
51. 31 − 84 = −53
52. −16 + 65 = 49

Percent Problems (continued)

Add and subtract integers (continued)

53. −45 + 89 = 44
54. −64 + 91 = 27

Decimal Operations

Multiply and divide decimals

1. 11.08 ÷ 2 = 5.54
2. 8.35 × 1.7 = 14.195
3. 58.88 ÷ 8 = 7.36
4. 3.46 × 8.63 = 29.8598
5. 44.66 ÷ 11 = 4.06
6. 4.0 × 4.50 = 18.000
7. 4.91 × 4 = 19.64
8. 11.6 × 10 = 116.0
9. 3.06 × 3.81 = 11.6586
10. 7.32 × 6.1 = 44.652
11. 9.54 ÷ 2 = 4.77
12. 6.9 × 7.91 = 54.579
13. 8.0 × 2.69 = 21.520
14. 51.48 ÷ 6 = 8.58
15. 7.3 × 2.7 = 19.71
16. 7.6 × 5.6 = 42.56
17. 2.4 × 2.7 = 6.48
18. 8.26 × 6.34 = 52.3684
19. 6.7 × 4.34 = 29.078
20. 75.00 ÷ 12 = 6.25
21. 2.79 × 8.7 = 24.273
22. 5.25 × 3.41 = 17.9025
23. 7.0 × 5.3 = 37.10
24. 134.28 ÷ 12 = 11.19
25. 8.84 × 0.78 = 6.8952
26. 3.25 × 6 = 19.50
27. 5.6 × 7 = 39.2
28. 6.4 × 4.13 = 26.432
29. 7.25 × 5.08 = 36.8300
30. 4.5 × 7 = 31.5
31. 3.8 × 4.37 = 16.606
32. 5.8 × 3.4 = 19.72
33. 92.32 ÷ 8 = 11.54
34. 7.35 × 2.3 = 16.905
35. 8.06 × 1.4 = 11.284
36. 4.35 × 8.88 = 38.6280
37. 0.1 × 4.94 = 0.494
38. 6.88 × 3.7 = 25.456
39. 5.9 × 2.9 = 17.11
40. 4.2 × 0.7 = 2.94
41. 1.98 × 6.7 = 13.266

Answer Key (4 of 9)

Decimal Operations (continued)

Multiply and divide decimals (continued)

42. 4.89 × 2.26 = 11.0514
43. 9.8 × 10 = 98.0
44. 5.47 × 9 = 49.23
45. 6.0 × 7.18 = 43.080
46. 51.84 ÷ 12 = 4.32
47. 3.13 × 5.72 = 17.9036
48. 2.32 × 6.16 = 14.2912
49. 5.21 × 5.1 = 26.571
50. 5.8 × 9 = 52.2

Multiplying and dividing integers

51. −70 ÷ −7 = 10
52. 88 ÷ −8 = −11
53. −24 ÷ −2 = 12
54. −5 × −6 = 30
55. −4 × −3 = 12
56. 80 ÷ −10 = −8
57. 44 ÷ −11 = −4
58. −60 ÷ 10 = −6
59. −9 × −7 = 63
60. −10 × −5 = 50

Fraction Operations

Multiplying and dividing fractions

1. 5/8 ÷ 1/8 = 5
2. 5/6 ÷ 1/7 = 35/6
3. 6/7 × 3/6 = 3/7
4. 1/5 ÷ 3/8 = 8/15
5. 5/6 ÷ 1/3 = 5/2
6. 2/4 ÷ 5/7 = 7/10
7. 7/8 × 1/6 = 7/48
8. 2/3 ÷ 6/7 = 7/9
9. 1/7 ÷ 1/6 = 6/7
10. 3/6 × 1/4 = 1/8
11. 1/8 ÷ 5/8 = 1/5
12. 1/3 ÷ 4/8 = 2/3
13. 6/8 × 4/6 = 1/2
14. 1/8 ÷ 3/5 = 5/24
15. 4/8 × 3/5 = 3/10
16. 3/8 ÷ 6/7 = 7/16
17. 2/5 ÷ 3/8 = 16/15
18. 1/4 × 4/8 = 1/8
19. 7/8 ÷ 3/7 = 49/24
20. 3/6 ÷ 1/2 = 1
21. 1/2 × 2/4 = 1/4
22. 2/8 ÷ 1/5 = 5/4
23. 2/7 ÷ 1/2 = 4/7

Fraction Operations (continued)

Multiplying and dividing fractions (continued)

24. 1/4 × 1/8 = 1/32
25. 3/5 ÷ 4/6 = 9/10
26. 3/7 ÷ 2/5 = 15/14
27. 3/5 × 4/7 = 12/35
28. 4/6 ÷ 6/8 = 8/9
29. 4/6 ÷ 1/4 = 8/3
30. 4/6 × 3/8 = 1/4
31. 3/5 ÷ 1/2 = 6/5
32. 3/4 ÷ 2/7 = 21/8
33. 3/6 × 4/8 = 1/4
34. 1/6 ÷ 1/8 = 4/3
35. 6/7 ÷ 1/7 = 6
36. 4/6 × 3/6 = 1/3
37. 4/5 ÷ 1/8 = 32/5
38. 7/8 ÷ 2/4 = 7/4
39. 7/8 × 3/5 = 21/40
40. 7/8 ÷ 4/7 = 49/32
41. 2/5 × 2/8 = 1/10
42. 4/5 ÷ 2/3 = 6/5
43. 1/4 ÷ 5/7 = 7/20
44. 3/6 × 1/5 = 1/10

Unit rates

45. $45 for 5 = $9 each
46. $12 for 3 = $4 each
47. $24 for 4 = $6 each
48. $9 for 3 = $3 each
49. $8 for 4 = $2 each
50. $24 for 6 = $4 each
51. $18 for 3 = $6 each
52. $28 for 4 = $7 each
53. $40 for 5 = $8 each
54. $96 for 8 = $12 each

Like Terms and the Distributive Property

Collect like terms

1. 10x + 12 − 8x − 5 → 2x + 7
2. 12x + 9 − 8x − 2 → 4x + 7
3. 8x + 2 − 4x − 1 → 4x + 1
4. 12x + 8 − 3x − 1 → 9x + 7
5. 8 + 5x + 8 + 5x → 10x + 16
6. 7x + 18 − 6x − 1 → 1x + 17
7. 10x + 15 − 7x − 2 → 3x + 13
8. 9x + 9 − 4x − 4 → 5x + 5
9. 11x + 18 − 9x − 4 → 2x + 14
10. 6x + 11 − x − 5 → 5x + 6
11. 5x + 17 − 4x − 14 → 1x + 3

Answer Key (5 of 9)

Like Terms and the Distributive Property (continued)

Collect like terms (continued)

12. 9x + 12 − 2x − 3 → 7x + 9
13. 10x + 19 − x − 10 → 9x + 9
14. 4x + 15 − x − 13 → 3x + 2
15. 4x + 17 − x − 8 → 3x + 9
16. 11x + 13 − 5x − 5 → 6x + 8

Multiply out brackets

17. 4(4x − 9) → 16x − 36
18. 5(9x + 7) → 45x + 35
19. 7(7x + 2) → 49x + 14
20. 7(3 + 5x) → 35x + 21
21. 2(7 + 8x) → 16x + 14
22. 8(4 + 5x) → 40x + 32
23. 5(8x + 7) → 40x + 35
24. 5(8x + 5) → 40x + 25
25. 4(10 + 5x) → 20x + 40
26. 3(9 + 6x) → 18x + 27
27. 3(5 + 5x) → 15x + 15
28. 9(5x − 4) → 45x − 36
29. 7(4 + 6x) → 42x + 28
30. 5(2 + 5x) → 25x + 10
31. 5(8x − 6) → 40x − 30
32. 6(8 + 6x) → 36x + 48

Solving Equations

Solving equations

1. 5x − 20 = 5 → x = 5
2. 3x + 5 = 32 → x = 9
3. 5x + 23 = 48 → x = 5
4. 2x + 17 = 47 → x = 15
5. 4x + 20 = 40 → x = 5
6. 3x + 1 = 34 → x = 11
7. 2x − 25 = 23 → x = 24
8. 5x + 15 = 50 → x = 7
9. 4x − 9 = 39 → x = 12
10. 3x + 7 = 37 → x = 10
11. 7x + 6 = 41 → x = 5
12. 3x − 24 = 9 → x = 11
13. 2x − 17 = 17 → x = 17
14. 6x − 37 = 5 → x = 7
15. 2x − 33 = 11 → x = 22
16. 4x + 6 = 46 → x = 10
17. 3x + 3 = 18 → x = 5
18. 5x − 2 = 43 → x = 9
19. 2x + 8 = 42 → x = 17
20. 3x + 9 = 27 → x = 6
21. 2x − 21 = 27 → x = 24

Solving Equations (continued)

Solving equations (continued)

22. 4x − 9 = 27 → x = 9
23. 2x + 1 = 35 → x = 17
24. 4x − 7 = 21 → x = 7
25. 3x − 18 = 9 → x = 9
26. 2x − 12 = 30 → x = 21
27. 2x + 5 = 19 → x = 7
28. 2x − 26 = 12 → x = 19
29. 2x − 21 = 5 → x = 13
30. 5x − 9 = 26 → x = 7
31. 5x − 15 = 35 → x = 10
32. 5x − 27 = 18 → x = 9
33. 7x − 5 = 30 → x = 5
34. 2x − 5 = 17 → x = 11
35. 2x − 37 = 9 → x = 23
36. 2x − 9 = 9 → x = 9
37. 6x + 1 = 49 → x = 8
38. 4x − 27 = 13 → x = 10
39. 3x + 1 = 46 → x = 15
40. 6x − 24 = 12 → x = 6
41. 3x − 24 = 24 → x = 16
42. 3x + 12 = 45 → x = 11
43. 3x + 7 = 31 → x = 8
44. 5x − 45 = 5 → x = 10
45. 2x − 27 = 5 → x = 16
46. 3x − 11 = 7 → x = 6
47. 2x − 35 = 9 → x = 22
48. 3x − 35 = 10 → x = 15
49. 2x + 1 = 31 → x = 15
50. 6x + 1 = 31 → x = 5

Percent

51. 10% more than 120 = 132
52. 20% more than 25 = 30
53. 80% more than 20 = 36
54. 50% more than 24 = 36
55. 10% more than 20 = 22
56. 25% more than 136 = 170
57. 60% more than 20 = 32
58. 60% more than 170 = 272
59. 60% more than 40 = 64
60. 50% more than 132 = 198

Inequalities

Inequalities

1. −5x + 2 > −23 → x < 5
2. −8x + 1 ≥ 97 → x ≤ −12
3. −8x + 6 < −34 → x > 5

Answer Key (6 of 9)

Inequalities (continued)

Inequalities (continued)

4. $-7x + 10 \leq -53 \rightarrow x \geq 9$
5. $2x + 9 > 77 \rightarrow x > 34$
6. $-8x + 8 \geq -80 \rightarrow x \leq 11$
7. $-3x + 2 > -73 \rightarrow x < 25$
8. $-3x + 5 > -10 \rightarrow x < 5$
9. $-2x + 7 \leq 57 \rightarrow x \geq -25$
10. $-2x + 4 \leq -82 \rightarrow x \geq 43$
11. $2x + 1 \geq -69 \rightarrow x \geq -35$
12. $-2x + 4 < 28 \rightarrow x > -12$
13. $-3x + 10 > 94 \rightarrow x < -28$
14. $-9x + 10 \geq -44 \rightarrow x \leq 6$
15. $-3x + 12 \leq -21 \rightarrow x \geq 11$
16. $-2x + 4 \leq 34 \rightarrow x \geq -15$
17. $-5x + 12 > -13 \rightarrow x < 5$
18. $-5x + 5 > -45 \rightarrow x < 10$
19. $-2x + 3 > 53 \rightarrow x < -25$
20. $-5x + 1 \leq -19 \rightarrow x \geq 4$
21. $-6x + 6 < -54 \rightarrow x > 10$
22. $-7x + 10 \leq -74 \rightarrow x \geq 12$
23. $-3x + 9 \geq 69 \rightarrow x \leq -20$
24. $2x + 5 \leq -39 \rightarrow x \leq -22$

Multiply and divide decimals

25. $19.50 \div 2 = 9.75$
26. $5.8 \times 3.4 = 19.72$
27. $5.8 \times 9 = 52.2$
28. $8.17 \times 2.4 = 19.608$
29. $20.66 \div 2 = 10.33$
30. $7.35 \times 2.3 = 16.905$
31. $8.38 \times 8.4 = 70.392$
32. $42.66 \div 6 = 7.11$
33. $4.76 \times 7.1 = 33.796$
34. $2.70 \times 5.6 = 15.120$

Area of Composite Shapes

Area of composite figures

1. 14×16 less 10×7: 154 cm²
2. 15×20 less 8×7: 244 cm²
3. 12×18 less 3×13: 177 cm²
4. 20×14 less 17×7: 161 cm²
5. 16×13 less 12×8: 112 cm²
6. 16×19 less 6×5: 274 cm²
7. 16×17 less 5×12: 212 cm²
8. 18×9 less 10×6: 102 cm²
9. 19×15 less 17×5: 200 cm²
10. 18×19 less 14×7: 244 cm²
11. 10×19 less 3×5: 175 cm²

Area of Composite Shapes (continued)

Area of composite figures (continued)

12. 20×13 less 16×4: 196 cm²
13. 17×18 less 6×7: 264 cm²
14. 15×12 less 4×9: 144 cm²

Multiplying and dividing fractions

15. $2/3 \div 3/5 = 10/9$
16. $5/8 \div 4/5 = 25/32$
17. $5/6 \times 1/2 = 5/12$
18. $1/5 \div 6/7 = 7/30$
19. $1/6 \div 1/5 = 5/6$
20. $2/6 \div 1/5 = 5/3$
21. $5/6 \times 1/8 = 5/48$
22. $2/3 \div 2/3 = 1$
23. $2/5 \div 2/5 = 1$
24. $1/8 \times 2/6 = 1/24$

Area of a Circle

Area of a circle

1. r = 7: 153.86 cm²
2. r = 13: 530.66 cm²
3. d = 18: 254.34 cm²
4. r = 20: 1256 cm²
5. d = 16: 200.96 cm²
6. r = 16: 803.84 cm²
7. r = 18: 1017.36 cm²
8. r = 9: 254.34 cm²
9. r = 15: 706.5 cm²
10. r = 19: 1133.54 cm²
11. r = 10: 314 cm²
12. r = 12: 452.16 cm²
13. r = 17: 907.46 cm²
14. d = 20: 314 cm²

Multiply out brackets

15. $3(7x + 11) \rightarrow 21x + 33$
16. $4(6x - 8) \rightarrow 24x - 32$
17. $2(7 + 5x) \rightarrow 10x + 14$
18. $7(7x + 3) \rightarrow 49x + 21$
19. $5(4x - 6) \rightarrow 20x - 30$
20. $5(9x - 6) \rightarrow 45x - 30$
21. $5(9 + 8x) \rightarrow 40x + 45$
22. $4(5x + 10) \rightarrow 20x + 40$
23. $4(8x + 12) \rightarrow 32x + 48$
24. $6(8x - 3) \rightarrow 48x - 18$

Circumference

Circumference of a circle

1. d = 14: 43.96 cm

Answer Key (7 of 9)

Circumference (continued)

Circumference of a circle (continued)

2. r = 17: 106.76 cm
3. d = 13: 40.82 cm
4. r = 18: 113.04 cm
5. r = 11: 69.08 cm
6. d = 18: 56.52 cm
7. d = 19: 59.66 cm
8. r = 9: 56.52 cm
9. r = 19: 119.32 cm
10. r = 13: 81.64 cm
11. d = 11: 34.54 cm
12. r = 15: 94.2 cm
13. d = 20: 62.8 cm
14. d = 16: 50.24 cm

Collect like terms

15. 12 + 5x + 6 + 5x → 10x + 18
16. 9x + 10 − 4x − 4 → 5x + 6
17. 5x + 17 − 3x − 10 → 2x + 7
18. 12x + 14 − 8x − 1 → 4x + 13
19. 6x + 14 − 4x − 10 → 2x + 4
20. 7x + 15 − x − 5 → 6x + 10
21. 10x + 16 − 5x − 1 → 5x + 15
22. 9x + 10 − 7x − 4 → 2x + 6
23. 11x + 14 − 2x − 6 → 9x + 8
24. 7x + 20 − 5x − 7 → 2x + 13

Angle Pairs

Missing angles in a pair

1. vertical, 118°: 118°
2. vertical, 30°: 30°
3. supplementary, 89°: 91°
4. vertical, 58°: 58°
5. vertical, 146°: 146°
6. vertical, 104°: 104°
7. complementary, 42°: 48°
8. vertical, 134°: 134°
9. vertical, 108°: 108°
10. supplementary, 141°: 39°
11. vertical, 84°: 84°
12. vertical, 73°: 73°
13. complementary, 35°: 55°
14. vertical, 122°: 122°

Solving equations

15. 2x + 30 = 42 → x = 6
16. 2x − 23 = 21 → x = 22
17. 3x + 11 = 29 → x = 6
18. 5x − 17 = 33 → x = 10

Angle Pairs (continued)

Solving equations (continued)

19. 6x + 5 = 47 → x = 7
20. 3x + 11 = 50 → x = 13
21. 3x − 5 = 37 → x = 14
22. 2x − 11 = 3 → x = 7
23. 2x − 2 = 38 → x = 20
24. 4x − 28 = 12 → x = 10

Angles in a Triangle

The third angle of a triangle

1. 25° + 60° = 85°: 95°
2. 75° + 80° = 155°: 25°
3. 55° + 75° = 130°: 50°
4. 30° + 75° = 105°: 75°
5. 55° + 60° = 115°: 65°
6. 25° + 50° = 75°: 105°
7. 45° + 105° = 150°: 30°
8. 40° + 75° = 115°: 65°
9. 35° + 70° = 105°: 75°
10. 30° + 50° = 80°: 100°
11. 50° + 95° = 145°: 35°
12. 55° + 90° = 145°: 35°
13. 30° + 80° = 110°: 70°
14. 65° + 70° = 135°: 45°

Inequalities

15. −9x + 10 < 28 → x > −2
16. −5x + 3 < 98 → x > −19
17. −4x + 1 ≥ −7 → x ≤ 2
18. −2x + 8 < 38 → x > −15
19. −6x + 2 < −4 → x > 1
20. −9x + 12 > 93 → x < −9
21. −2x + 6 > 50 → x < −22
22. 3x + 5 ≥ 74 → x ≥ 23
23. −2x + 5 > 37 → x < −16
24. −7x + 10 ≤ 73 → x ≥ −9

Volume of Cylinders

Volume of a cylinder

1. d = 12, h = 15: 1695.6 cm³
2. d = 14, h = 20: 3077.2 cm³
3. r = 5, h = 11: 863.5 cm³
4. r = 7, h = 19: 2923.34 cm³
5. d = 12, h = 9: 1017.36 cm³
6. d = 18, h = 19: 4832.46 cm³
7. r = 7, h = 15: 2307.9 cm³

Add and subtract integers

8. −70 + 77 = 7

Answer Key (8 of 9)

Volume of Cylinders (continued)

Add and subtract integers (continued)

9. 23 − 68 = −45
10. −21 + 55 = 34
11. 72 − 86 = −14
12. 42 − 51 = −9
13. −75 + 89 = 14
14. 55 − 73 = −18

Surface Area

Surface area of a box

1. 6×8×11 → 2(48 + 66 + 88): 404 cm²
2. 3×15×15 → 2(45 + 45 + 225): 630 cm²
3. 7×7×11 → 2(49 + 77 + 77): 406 cm²
4. 7×13×13 → 2(91 + 91 + 169): 702 cm²
5. 7×9×13 → 2(63 + 91 + 117): 542 cm²
6. 9×9×14 → 2(81 + 126 + 126): 666 cm²
7. 5×14×14 → 2(70 + 70 + 196): 672 cm²
8. 5×7×14 → 2(35 + 70 + 98): 406 cm²

Multiplying and dividing integers

9. −54 ÷ 9 = −6
10. 33 ÷ −3 = −11
11. 12 × −12 = −144
12. −7 × −12 = 84
13. −72 ÷ 8 = −9
14. 35 ÷ −5 = −7
15. 110 ÷ −10 = −11
16. −99 ÷ 11 = −9

Similar Figures

Similar figures and scale

1. 9 by x and 18 by 8: 4
2. 5 by x and 15 by 12: 4
3. 8 by x and 16 by 6: 3
4. 6 by x and 24 by 20: 5
5. 10 by x and 20 by 12: 6
6. 4 by x and 16 by 8: 2
7. 6 by x and 18 by 9: 3
8. 5 by x and 10 by 4: 2
9. 5 by x and 15 by 6: 2
10. 4 by x and 12 by 9: 3

Unit rates

11. $24 for 4 = $6 each
12. $9 for 3 = $3 each
13. $24 for 6 = $4 each
14. $28 for 4 = $7 each
15. $55 for 5 = $11 each
16. $18 for 2 = $9 each

Similar Figures (continued)

Unit rates (continued)

17. $35 for 7 = $5 each
18. $56 for 7 = $8 each
19. $77 for 7 = $11 each
20. $25 for 5 = $5 each

Probability

Probability of one event

1. 2 red, 8 blue, 2 green → P(not blue) = 1/3
2. 2 red, 4 blue, 6 green → P(not red) = 5/6
3. 5 red, 3 blue, 4 green → P(green) = 1/3
4. 5 red, 3 blue, 4 green → P(not blue) = 3/4
5. 3 red, 9 blue → P(blue) = 3/4
6. 6 red, 3 blue, 3 green → P(not blue) = 3/4
7. 8 red, 2 blue, 2 green → P(red) = 2/3
8. 5 red, 4 blue, 3 green → P(blue) = 1/3
9. 2 red, 6 blue, 4 green → P(not red) = 5/6
10. 7 red, 3 blue, 2 green → P(not blue) = 3/4
11. 4 red, 4 blue, 4 green → P(green) = 1/3
12. 2 red, 7 blue, 3 green → P(not red) = 5/6
13. 7 red, 3 blue, 2 green → P(not green) = 5/6
14. 7 red, 2 blue, 3 green → P(red) = 7/12
15. 3 red, 3 blue, 6 green → P(not red) = 3/4
16. 5 red, 4 blue, 3 green → P(not blue) = 2/3
17. 4 red, 3 blue, 5 green → P(red) = 1/3
18. 8 red, 2 blue, 2 green → P(not blue) = 5/6
19. 6 red, 4 blue, 2 green → P(not green) = 5/6
20. 5 red, 5 blue, 2 green → P(not red) = 7/12
21. 3 red, 2 blue, 7 green → P(not red) = 3/4
22. 4 red, 3 blue, 5 green → P(not blue) = 3/4
23. 3 red, 7 blue, 2 green → P(not green) = 5/6
24. 3 red, 2 blue, 7 green → P(green) = 7/12

Percent

25. 25% more than 24 = 30
26. 80% more than 110 = 198
27. 50% more than 32 = 48
28. 5% more than 100 = 105
29. 25% more than 52 = 65
30. 75% more than 164 = 287
31. 75% more than 88 = 154
32. 40% more than 20 = 28
33. 25% more than 144 = 180
34. 5% more than 180 = 189

Probability Word Problems

Word problems: probability

1. not green: 6 out of 8 = 3/4

Answer Key (9 of 9)

Probability Word Problems (continued)

Word problems: probability (continued)

2. not red: 6 out of 8 = 3/4
3. 5 out of 12 = 5/12
4. 6 out of 8 = 3/4
5. not green: 4 out of 6 = 2/3
6. not green: 9 out of 12 = 3/4

Multiply and divide decimals

7. 5.5 × 5 = 27.5
8. 4.1 × 7.9 = 32.39
9. 22.26 ÷ 2 = 11.13
10. 3.17 × 6.9 = 21.873
11. 18.28 ÷ 2 = 9.14
12. 6.0 × 7.18 = 43.080

Mean, Median and Mode

Mean, median, mode and range

1. Median of 23, 12, 36, 23, 6 = 23
2. Mean of 39, 43, 33, 39, 46 = 40
3. Mode of 20, 18, 35, 42, 35 = 35
4. Mode of 21, 47, 7, 38, 7 = 7
5. Mean of 38, 38, 13, 41, 15 = 29
6. Mean of 44, 29, 21, 2, 29 = 25
7. Range of 49, 46, 26, 3, 46 = 46
8. Mean of 41, 41, 26, 25, 32 = 33
9. Mean of 19, 20, 49, 31, 31 = 30
10. Mean of 5, 12, 46, 5, 42 = 22
11. Median of 6, 19, 20, 41, 19 = 19
12. Mode of 24, 25, 31, 25, 50 = 25
13. Median of 1, 29, 30, 46, 29 = 29
14. Mode of 17, 41, 22, 17, 18 = 17
15. Mode of 49, 49, 7, 8, 42 = 49
16. Mean of 4, 44, 26, 17, 44 = 27
17. Range of 34, 8, 8, 42, 33 = 34
18. Mean of 21, 47, 7, 38, 7 = 24
19. Range of 42, 50, 20, 31, 42 = 30
20. Mode of 23, 20, 13, 39, 20 = 20
21. Median of 47, 8, 3, 29, 3 = 8
22. Mean of 40, 47, 3, 17, 3 = 22
23. Median of 42, 50, 20, 31, 42 = 42
24. Median of 31, 40, 22, 26, 26 = 26

Multiplying and dividing fractions

25. 1/8 ÷ 4/7 = 7/32
26. 1/7 ÷ 2/6 = 3/7
27. 7/8 × 4/7 = 1/2
28. 2/8 ÷ 7/8 = 2/7

Mean, Median and Mode (continued)

Multiplying and dividing fractions (continued)

29. 7/8 ÷ 2/3 = 21/16
30. 2/5 ÷ 1/7 = 14/5
31. 1/5 × 2/8 = 1/20
32. 1/6 ÷ 5/8 = 4/15
33. 3/7 ÷ 3/7 = 1
34. 2/5 × 1/2 = 1/5

Box Plots

Box plots

1. the end of the right whisker — 60 cm
2. the left edge of the box — 25 cm
3. the right edge of the box — 45 cm
4. the line inside the box — 25 minutes

Multiply out brackets

5. 2(8 + 6x) → 12x + 16
6. 7(6x – 2) → 42x – 14
7. 4(3x – 8) → 12x – 32
8. 8(5x – 5) → 40x – 40

Check the Working

Check the working

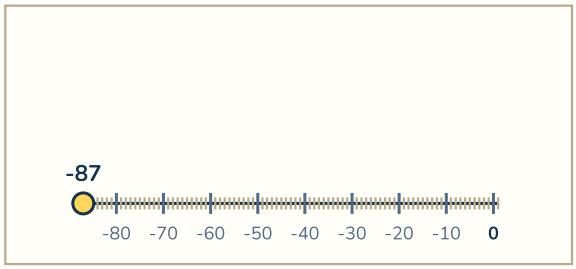
1. 4(x + 5) + 3(x + 7) = 7x + 41, which is what was written — this line is correct
2. 4(x + 8) + 6(x + 8) = 10x + 80, which is what was written — this line is correct
3. 5(x + 6) + 3(x + 5) = 8x + 45, which is what was written — this line is correct
4. 5(x + 6) + 2(x + 5) = 7x + 40, which is what was written — this line is correct
5. 4(x + 7) + 6(x + 8) = 10x + 76, not 10x + 1344 (the two numbers were multiplied together where they should be added)
6. 4(x + 4) + 2(x + 3) = 6x + 22, not 6x + 10 (the first bracket reached its x but not its number)
7. 5(x + 6) + 5(x + 5) = 10x + 55, not 6x + 35 (the second bracket was never multiplied out)
8. 3(x + 5) + 6(x + 7) = 9x + 57, not 9x + 630 (the two numbers were multiplied together where they should be added)

Solutions (1 of 22)

Positive and Negative Numbers

Add and subtract integers

1. **−87 + 78 = ___**

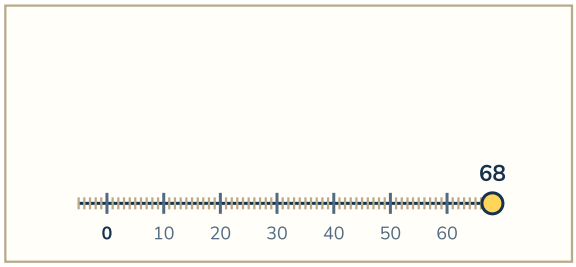


Put a counter on -87. Everything else is which way it slides and how far.

Adding a positive moves right, the way it always has.

So slide 78 to the right, from -87 to -9. (-87) + 78 = -9.

2. **68 − 72 = ___**



Put a counter on 68. Everything else is which way it slides and how far.

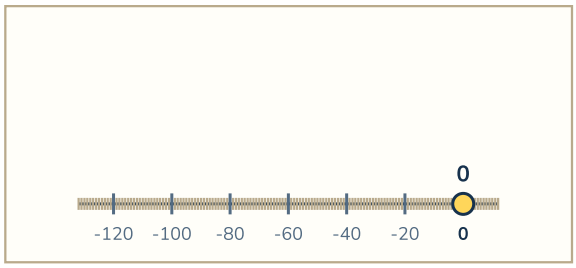
Taking away a positive moves left, the way it always has.

So slide 72 to the left, from 68 to -4. 68 − 72 = -4.

Multiplying and Dividing Integers

Multiplying and dividing integers

1. **−12 × 10 = _____**



(-12) × 10 is 10 lots of -12. Start at 0 and take them one at a time — the size is ordinary times-tables, so what is left to settle is which way it goes.

One lot of -12 goes LEFT, landing on -12.

All 10 hops go the same way — not one of them turns round — so it can only get further from 0, never back towards it. That is the whole of why the answer is below zero.

10 hops of 12 is 120 of distance, all of it on the low side. So (-12) × 10 = -120.

Solutions (2 of 22)

Multiplying and Dividing Integers (continued)

Multiplying and dividing integers (continued)

2. **−6 × (−5) = ___**

(-6) × (-5) = **?**

6 × 5 = **30**

signs: (-6) (-5) → **plus**

(-6) × (-5) = **30**

Two easy jobs, kept apart: how BIG the answer is, then which side of zero it is on. Do the size first, with the minus signs set aside.

Signs off: 6 × 5 = 30. Ordinary times-tables — the negatives play no part in the size.

Now the sign. Both numbers are negative, and two minus signs cancel each other — the way "not un-happy" just means happy. Same signs give a PLUS.

Size 30, sign plus — so (-6) × (-5) = 30.

Ratio and Proportion

Unit rates

1. **$45 for 5 = ___ each**

$45 for 5

$45 ÷ 5 = **$9**

5 for $45. To compare prices at all you have to get down to ONE — that is what a unit rate is for.

Sharing the price between them: $45 ÷ 5 = $9 each.

2. **$42 for 6 = ___ each**

$42 for 6

$42 ÷ 6 = **$7**

6 for $42. To compare prices at all you have to get down to ONE — that is what a unit rate is for.

Sharing the price between them: $42 ÷ 6 = $7 each.

Percent Problems

Percent

1. **25% more than 124 = ____**

1% of 124 = **1.24**

1.24 × 25 = **31**

124 + 31 = **155**

Find one percent first — that is one hundredth of 124, which is 1.24.

25% is 25 of those, so multiply: 1.24 × 25 = 31.

"More than" means the 31 goes ON TOP of the 124, not instead of it: 124 + 31 = 155.

Solutions (3 of 22)

Percent Problems (continued)

Percent (continued)

2. **20% more than 25 = ___**

1% of 25 = **0.25**

0.25 × 20 = **5**

25 + 5 = **30**

Find one percent first — that is one hundredth of 25, which is 0.25.

20% is 20 of those, so multiply: 0.25 × 20 = 5.

"More than" means the 5 goes ON TOP of the 25, not instead of it: 25 + 5 = 30.

Decimal Operations

Multiply and divide decimals

1. **11.08 ÷ 2 = _____**

11.08 ÷ **2**

11.08 ÷ 2 = **5.54**

5.54 × 2 = **11.08**

The number you are dividing by is already whole, so there is nothing to move: divide as usual and the point in the answer comes straight down.

Now divide: 11.08 ÷ 2 = 5.54.

Check it the other way round: 5.54 × 2 should give 11.08 back. A point in the wrong place fails this instantly — 11.08 and a tenth of it are not close.

2. **8.35 × 1.7 = _____**

8.35 × **1.7**

835 × 17 = **14195**

8.35 **→ 2 figures**

1.7 **→ 1 figure**

14195 3 from the right

8.35 × 1.7 = **14.195**

Do NOT line the points up — that is for adding. For a multiply, take the points off and do it as whole numbers first.

835 × 17 = 14195. Ordinary times-tables, nothing decimal about it.

Now count the figures after the points in the QUESTION: 2 figures in 8.35 and 1 figure in 1.7 — 3 altogether.

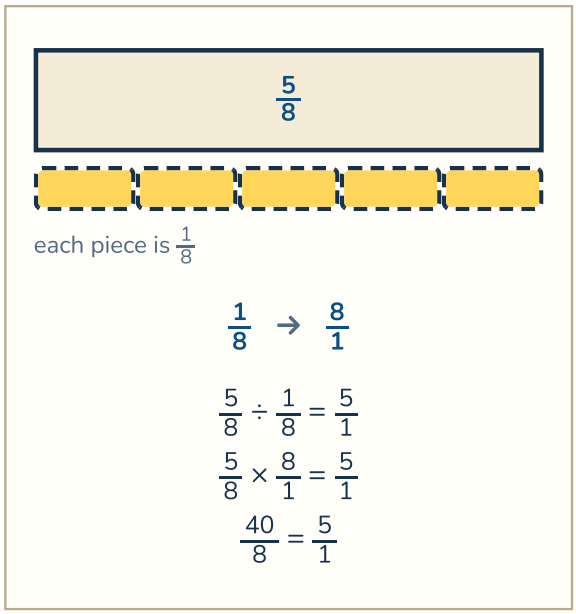
So the answer gets 3 too. Count 3 in from the right of 14195 and put the point there: 14.195.

Solutions (4 of 22)

Fraction Operations

Multiplying and dividing fractions

1. $\frac{5}{8} \div \frac{1}{8} = \text{—}$



5/8 ÷ 1/8 is asking a question: how many 1/8s fit inside 5/8?

Lay 1/8 against it and see how many times it goes.

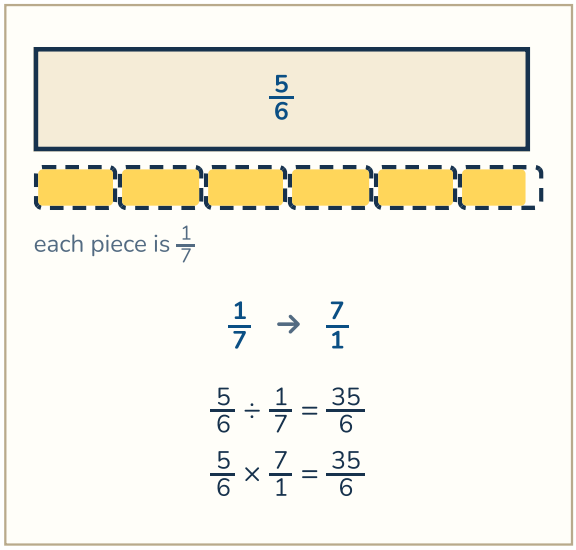
5 whole pieces fits — so 5/8 ÷ 1/8 = 5/1.

Now try multiplying by 8/1 — 1/8 turned over. It lands on the same number.

That is all turning it over does — the two questions are the same question, so either way of writing it will do. 5/8 ÷ 1/8 = 5/1.

Worked out in full: 5 × 8 over 8 × 1 is 40/8, which simplifies to 5/1.

2. $\frac{5}{6} \div \frac{1}{7} = \text{—}$



5/6 ÷ 1/7 is asking a question: how many 1/7s fit inside 5/6?

Lay 1/7 against it and see how many times it goes.

5 whole pieces and 5/6 of another fits — so 5/6 ÷ 1/7 = 35/6.

Now try multiplying by 7/1 — 1/7 turned over. It lands on the same number.

That is all turning it over does — the two questions are the same question, so either way of writing it will do. 5/6 ÷ 1/7 = 35/6.

Solutions (5 of 22)

Like Terms and the Distributive Property

Collect like terms

1. **10x + 12 − 8x − 5**

10x + 12 − 8x − 5

10 − 8 = **2**

12 − 5 = **7**

2x + **7**

There are two kinds of thing on this line and they cannot mix: the x terms, and the plain numbers. Sort them into two piles before adding anything — the x terms are 10x and −8x, and the numbers are 12 and −5.

Add up the x pile, keeping the signs: 10 − 8 = 2, so 2x.

Then the number pile, on its own: 12 − 5 = 7.

So it is 2x + 7 — and that is finished, even though it is still two things. Squashing them into 9x would be answering "2 whats and 7 whats?", and there is no answer to that until somebody says what x is.

2. **12x + 9 − 8x − 2**

12x + 9 − 8x − 2

12 − 8 = **4**

9 − 2 = **7**

4x + **7**

There are two kinds of thing on this line and they cannot mix: the x terms, and the plain numbers. Sort them into two piles before adding anything — the x terms are 12x and −8x, and the numbers are 9 and −2.

Add up the x pile, keeping the signs: 12 − 8 = 4, so 4x.

Then the number pile, on its own: 9 − 2 = 7.

So it is 4x + 7 — and that is finished, even though it is still two things. Squashing them into 11x would be answering "4 whats and 7 whats?", and there is no answer to that until somebody says what x is.

Solutions (6 of 22)

Like Terms and the Distributive Property (continued)

Multiply out brackets

17. **4(4x − 9)**

4(4x − 9)

$4 \times 4x = 16x$

$4 \times 9 = 36$

$16x - 36$

The 4 outside multiplies EVERYTHING inside the bracket, not just the thing next to it. Draw an arrow from the 4 to each of the two terms before working anything out — that is what stops one of them being left behind.

First arrow: $4 \times 4x = 16x$.

Second arrow: $4 \times 9 = 36$. The sign travels with the number it belongs to, so this one stays negative.

Put the two together: $16x - 36$. Check it by putting a small number in for x on both forms — they should agree, because they are the same amount written two ways.

18. **5(9x + 7)**

5(9x + 7)

$5 \times 9x = 45x$

$5 \times 7 = 35$

$45x + 35$

The 5 outside multiplies EVERYTHING inside the bracket, not just the thing next to it. Draw an arrow from the 5 to each of the two terms before working anything out — that is what stops one of them being left behind.

First arrow: $5 \times 9x = 45x$.

Second arrow: $5 \times 7 = 35$.

Put the two together: $45x + 35$. Check it by putting a small number in for x on both forms — they should agree, because they are the same amount written two ways.

Solutions (7 of 22)

Solving Equations

Solving equations

1. **5x − 20 = 5** ___

$$5x - 20 = 5$$
$$5x = 25$$
$$x = 5$$

Two things were done to x: multiplied by 5, then 20 taken away. Undo them in the REVERSE order — whatever happened last comes off first.

The 20 went on last, so it comes off first — and off BOTH sides, or the two halves stop being equal. 5 + 20 = 25.

That leaves 5x, which means 5 lots of x. Divide both sides by 5: 25 ÷ 5 = 5.

Check by putting it back: 5(5) − 20 = 5. It holds, so x = 5.

2. **3x + 5 = 32** ___

$$3x + 5 = 32$$
$$3x = 27$$
$$x = 9$$

Two things were done to x: multiplied by 3, then 5 added. Undo them in the REVERSE order — whatever happened last comes off first.

The 5 went on last, so it comes off first — and off BOTH sides, or the two halves stop being equal. 32 − 5 = 27.

That leaves 3x, which means 3 lots of x. Divide both sides by 3: 27 ÷ 3 = 9.

Check by putting it back: 3(9) + 5 = 32. It holds, so x = 9.

Solutions (8 of 22)

Inequalities

Inequalities

1. $-5x + 2 > -23$ x ☐ 5

$x < 5$

An inequality comes apart exactly like an equation — the same moves, done to both sides. There is one extra rule and it arrives at the end, so start by ignoring the sign and solving for x.

2 was added last, so it comes off first — off BOTH sides: -23 − 2 = -25.

Now divide both sides by −5: -25 ÷ −5 = 5.

Here is the extra rule, and it is the only one: dividing both sides by a NEGATIVE turns the sign round, so > becomes <. Do not take that on trust — put a number from the answer back into the question and see which way it has to face.

So x < 5. That is a whole RANGE of numbers rather than one, which is what makes this different from an equation — and why the sign is half the answer.

Solutions (9 of 22)

Inequalities (continued)

Inequalities (continued)

2. $-8x + 1 \geq 97 \quad x \square -12$

$x \leq -12$

An inequality comes apart exactly like an equation — the same moves, done to both sides. There is one extra rule and it arrives at the end, so start by ignoring the sign and solving for x.

1 was added last, so it comes off first — off BOTH sides: 97 − 1 = 96.

Now divide both sides by −8: 96 ÷ −8 = −12.

Here is the extra rule, and it is the only one: dividing both sides by a NEGATIVE turns the sign round, so ≥ becomes ≤. Do not take that on trust — put a number from the answer back into the question and see which way it has to face.

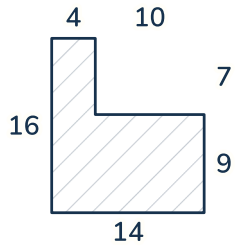
So x ≤ −12. That is a whole RANGE of numbers rather than one, which is what makes this different from an equation — and why the sign is half the answer.

Solutions (10 of 22)

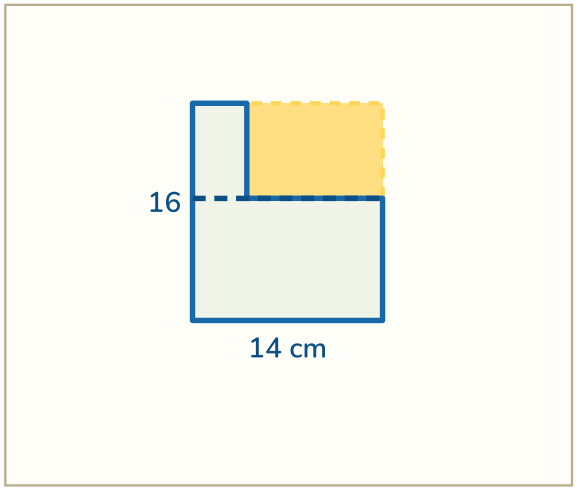
Area of Composite Shapes

Area of composite figures

1.



____ cm²



First way: pretend the bite was never taken. The whole rectangle would be 14 × 16 = 224.

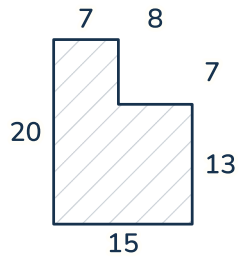
Then take the bite off. It is 10 × 7 = 70, so the L is 224 − 70 = 154 square cm.

Second way, and it works on any of these: cut the L into two rectangles.

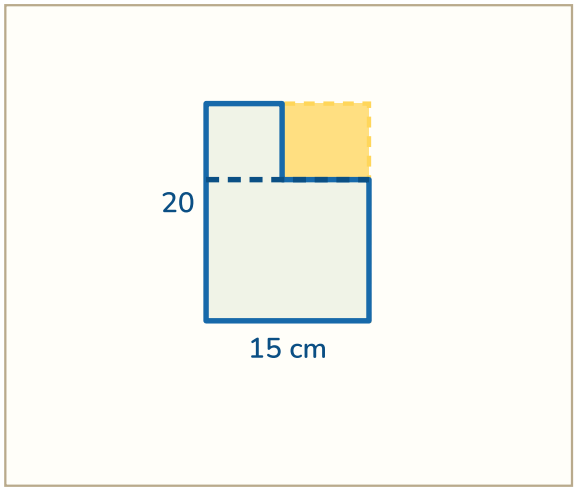
The bottom strip is 14 × 9 = 126, and the piece standing on it is 4 × 7 = 28.

126 + 28 = 154 square cm — the same answer as the first way. Two methods that agree is how you know the answer is right.

2.



____ cm²



First way: pretend the bite was never taken. The whole rectangle would be 15 × 20 = 300.

Then take the bite off. It is 8 × 7 = 56, so the L is 300 − 56 = 244 square cm.

Second way, and it works on any of these: cut the L into two rectangles.

The bottom strip is 15 × 13 = 195, and the piece standing on it is 7 × 7 = 49.

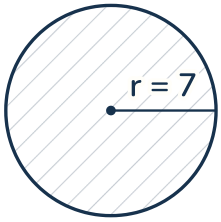
195 + 49 = 244 square cm — the same answer as the first way. Two methods that agree is how you know the answer is right.

Solutions (11 of 22)

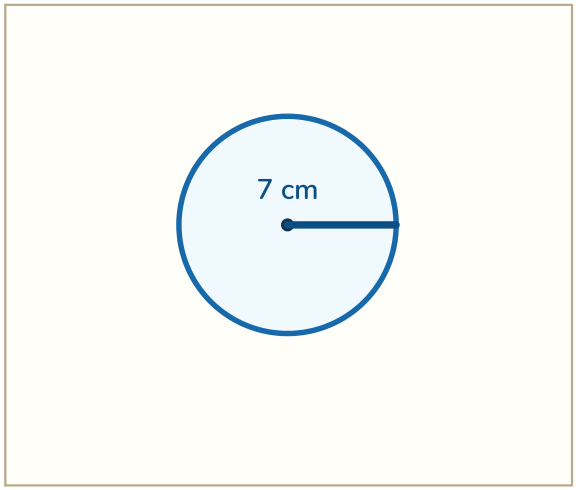
Area of a Circle

Area of a circle

1.



_____ cm²

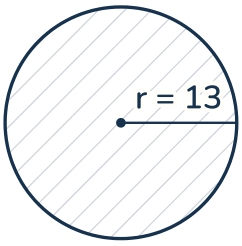


The 7 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

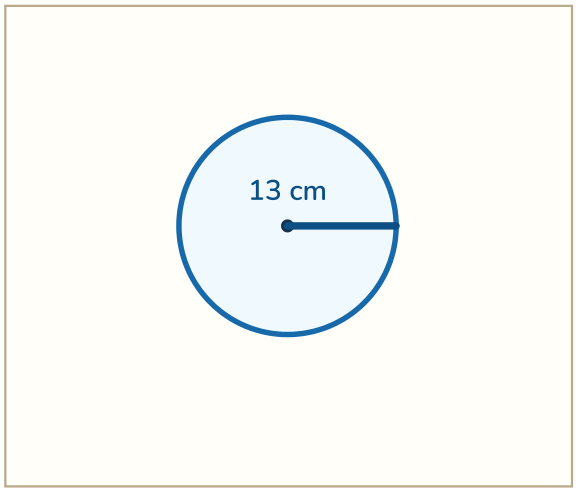
Area is π × r × r. Square the RADIUS first — only the r is squared, not the π with it: 7 × 7 = 49.

Then multiply by π: 49 × 3.14 = 153.86 square cm.

2.



_____ cm²



The 13 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

Area is π × r × r. Square the RADIUS first — only the r is squared, not the π with it: 13 × 13 = 169.

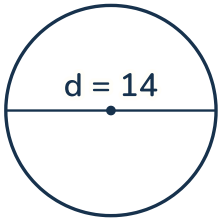
Then multiply by π: 169 × 3.14 = 530.66 square cm.

Solutions (12 of 22)

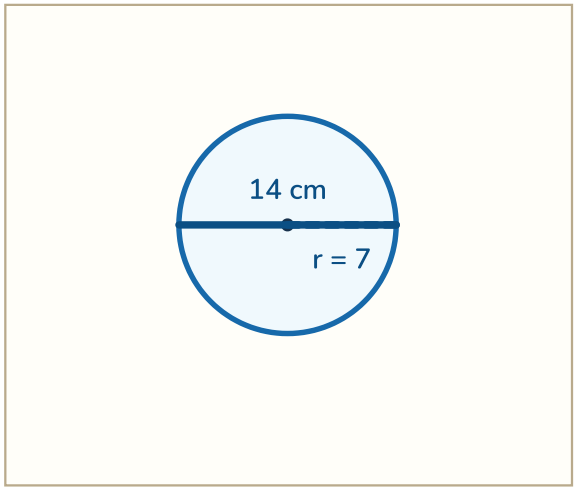
Circumference

Circumference of a circle

1.



_____ cm

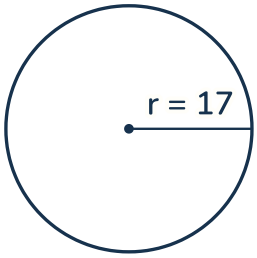


The 14 cm marked here goes right ACROSS the circle — it is the diameter, the whole way across, which is exactly what a circumference needs.

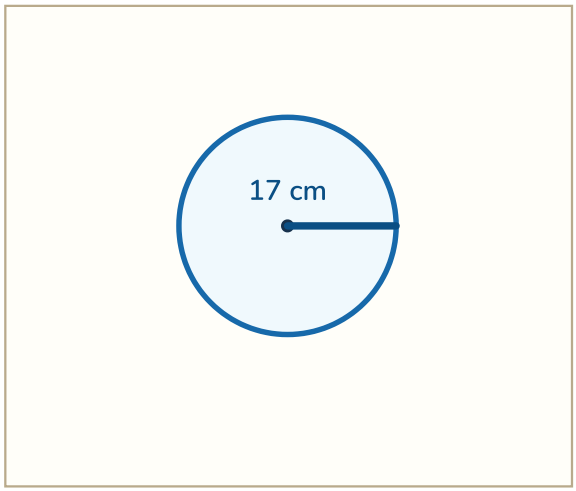
Circumference is π × the whole way across — that is the diameter, 14.

Then multiply by π: 14 × 3.14 = 43.96 cm. Slightly more than three times across — which is what π has always been.

2.



_____ cm



The 17 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

Circumference is π × the whole way across, and the whole way across is two radiuses: 2 × 17 = 34.

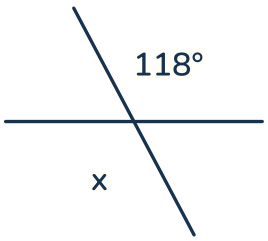
Then multiply by π: 34 × 3.14 = 106.76 cm. Slightly more than three times across — which is what π has always been.

Solutions (13 of 22)

Angle Pairs

Missing angles in a pair

1.



____ degrees

118° and x

opposite = **equal**

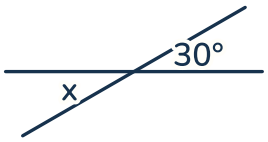
118° → **118°**

Two straight lines crossing. This is the pair that is NOT a subtraction — nothing adds to 90 or 180 here, so reaching for either is the mistake.

Angles opposite each other at a crossing are EQUAL. Each one is what is left when the same straight line is taken away from the same straight line, so they cannot differ.

So x is 118° — the same as the one across from it, not 180 minus it.

2.



____ degrees

30° and x

opposite = **equal**

30° → **30°**

Two straight lines crossing. This is the pair that is NOT a subtraction — nothing adds to 90 or 180 here, so reaching for either is the mistake.

Angles opposite each other at a crossing are EQUAL. Each one is what is left when the same straight line is taken away from the same straight line, so they cannot differ.

So x is 30° — the same as the one across from it, not 180 minus it.

Solutions (14 of 22)

Angles in a Triangle

The third angle of a triangle

1.

___ degrees

$25 + 60 = 85$

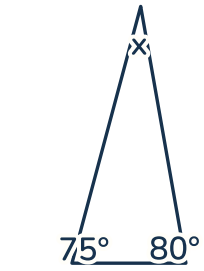
$180 - 85 = \mathbf{95°}$

Every triangle's three angles add to 180 — and that is not a number to take on trust. Tear the three corners off any triangle you like and they fit together into a straight line, every time.

Two of them are given: 25 and 60, which is 85 between them.

So the third takes up what is left of the 180: $180 - 85 = 95°$.

2.



___ degrees

$75 + 80 = 155$

$180 - 155 = \mathbf{25°}$

Every triangle's three angles add to 180 — and that is not a number to take on trust. Tear the three corners off any triangle you like and they fit together into a straight line, every time.

Two of them are given: 75 and 80, which is 155 between them.

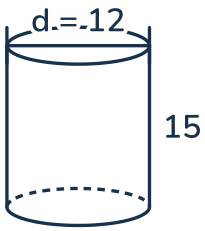
So the third takes up what is left of the 180: $180 - 155 = 25°$.

Solutions (15 of 22)

Volume of Cylinders

Volume of a cylinder

1.



base: 113.04

113.04 × 15 = **1695.6**

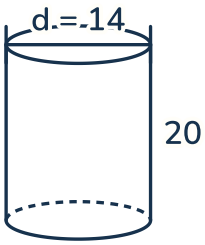
The 12 cm goes right across, so it is the diameter. Halve it first: the radius is 6. Every one of these formulas SQUARES the radius, so getting this wrong is out by a factor of four, not two.

Same idea as a box: the area of the base times how tall it is. Here the base is a circle, and that is the only difference.

The circle's area is π × r × r = 3.14 × 6 × 6 = 113.04 square cm.

Times the height: 113.04 × 15 = 1695.6 cubic cm.

2.



base: 153.86

153.86 × 20 = **3077.2**

The 14 cm goes right across, so it is the diameter. Halve it first: the radius is 7. Every one of these formulas SQUARES the radius, so getting this wrong is out by a factor of four, not two.

Same idea as a box: the area of the base times how tall it is. Here the base is a circle, and that is the only difference.

The circle's area is π × r × r = 3.14 × 7 × 7 = 153.86 square cm.

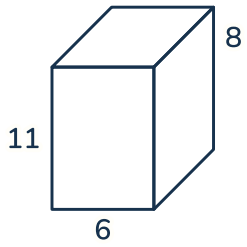
Times the height: 153.86 × 20 = 3077.2 cubic cm.

Solutions (16 of 22)

Surface Area

Surface area of a box

1.



____ cm²

front and back:	2 × 6 × 11 =	132
the two sides:	2 × 8 × 11 =	176
top and bottom:	2 × 6 × 8 =	96
total:		**404**

Six faces, and the drawing can only show you three of them. The three you cannot see are the reason the usual wrong answer here is five faces added perfectly.

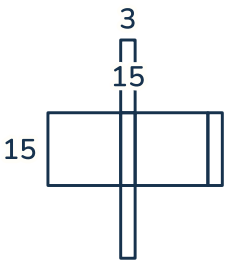
Front and back are 6 by 11, and they are identical — so that pair is 2 × 6 × 11 = 132.

The two sides are 8 by 11, and they are identical — so that pair is 2 × 8 × 11 = 176.

Top and bottom are 6 by 8, and they are identical — so that pair is 2 × 6 × 8 = 96.

Three pairs, six faces, none missed: 132 + 176 + 96 = 404 square cm.

2.



____ cm²

front and back:	2 × 3 × 15 =	90
the two sides:	2 × 15 × 15 =	450
top and bottom:	2 × 3 × 15 =	90
total:		**630**

A net lays all six faces out flat, so none of them is hidden — which is the whole reason a net is easier than the solid. They still come in three PAIRS.

Front and back are 3 by 15, and they are identical — so that pair is 2 × 3 × 15 = 90.

The two sides are 15 by 15, and they are identical — so that pair is 2 × 15 × 15 = 450.

Top and bottom are 3 by 15, and they are identical — so that pair is 2 × 3 × 15 = 90.

Three pairs, six faces, none missed: 90 + 450 + 90 = 630 square cm.

Solutions (17 of 22)

Similar Figures

Similar figures and scale

1.

4 cm

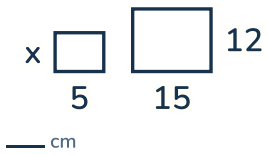
Two shapes, the same shape at two sizes. Every side of the big one is the matching side of the small one multiplied by the SAME number — so the first job is to pair the sides up: long with long, short with short.

Use the pair you can see both of. 9 became 18, and 18 ÷ 9 = 2 — so every side is 2 times bigger.

Now the missing side is on the SMALL shape, so it shrinks — divide instead of multiply: 8 ÷ 2 = 4.

Check it against the picture: the answer should be smaller than 8, and 4 is. So the missing side is 4 cm.

2.



4 cm

Two shapes, the same shape at two sizes. Every side of the big one is the matching side of the small one multiplied by the SAME number — so the first job is to pair the sides up: long with long, short with short.

Use the pair you can see both of. 5 became 15, and 15 ÷ 5 = 3 — so every side is 3 times bigger.

Now the missing side is on the SMALL shape, so it shrinks — divide instead of multiply: 12 ÷ 3 = 4.

Check it against the picture: the answer should be smaller than 12, and 4 is. So the missing side is 4 cm.

Solutions (18 of 22)

Probability

Probability of one event

1. **2 red, 8 blue, 2 green** P(not blue) ____

$$2 + 8 + 2 = 12$$

$$\frac{4}{12} = \frac{1}{3}$$

Count EVERYTHING first, before the ones being asked about: 2 + 8 + 2 = 12 altogether. That is the bottom of the fraction, and it is the half that gets swapped for the wrong number.

Read the question again: it asks for NOT blue. So the wins are everything ELSE in the bag — all 12 of them except the 8 blue, which is 12 − 8 = 4.

Chance is the wins OVER the total — not over the rest. So it is 4 out of 12.

Check it: the chance of blue and the chance of not blue have to fill the bag between them. 8 out of 12 and 4 out of 12 make 12 out of 12 — the whole bag, which is 1. If they do not add up, one of the two counts is wrong.

And 4/12 can be written in bigger pieces: 1/3.

2. **2 red, 4 blue, 6 green** P(not red) ____

$$2 + 4 + 6 = 12$$

$$\frac{10}{12} = \frac{5}{6}$$

Count EVERYTHING first, before the ones being asked about: 2 + 4 + 6 = 12 altogether. That is the bottom of the fraction, and it is the half that gets swapped for the wrong number.

Read the question again: it asks for NOT red. So the wins are everything ELSE in the bag — all 12 of them except the 2 red, which is 12 − 2 = 10.

Chance is the wins OVER the total — not over the rest. So it is 10 out of 12.

Check it: the chance of red and the chance of not red have to fill the bag between them. 2 out of 12 and 10 out of 12 make 12 out of 12 — the whole bag, which is 1. If they do not add up, one of the two counts is wrong.

And 10/12 can be written in bigger pieces: 5/6.

Solutions (19 of 22)

Mean, Median and Mode

Mean, median, mode and range

1. **Median**
   23, 12, 36, 23, 6

—

given: 23 12 36 23 6

sorted: 6 12 **23** 23 36

The median is the one in the MIDDLE. Middle of the sorted row, though — not the row as it was given.

So put them in order, smallest first.

Count in from both ends. 23 is the one left in the middle, so that is the median.

2. **Mean**
   39, 43, 33, 39, 46

—

39 43 33 39 46

39 + 43 + 33 + 39 + 46 = 200

200 ÷ 5 = **40**

The mean is what every number WOULD be if the total were shared out evenly. So first find the total.

39 + 43 + 33 + 39 + 46 = 200.

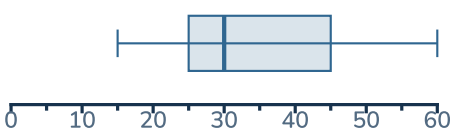
Now share it between all 5 of them: 200 ÷ 5 = 40.

Solutions (20 of 22)

Box Plots

Box plots

1. **Height of the sunflowers (cm)**



What is the largest value?

____

left whisker end: 15 cm

left edge of the box: 25 cm

line inside the box: 30 cm

right edge of the box: 45 cm

right whisker end: **60 cm**

60 cm

A box plot is five numbers drawn to scale — not a bar, and nothing here is a total. Read the five marks off one at a time, and the question answers itself.

Left whisker end: 15 cm — the smallest value.

Left edge of the box: 25 cm — the quarter mark — a quarter of the data is below it.

Line inside the box: 30 cm — the MEDIAN, not the mean and not the middle of the box's width.

Right edge of the box: 45 cm — the three-quarter mark.

Right whisker end: 60 cm — the largest value.

Now the question. It is asking for the right whisker end, and that has already been read off — no arithmetic is owed.

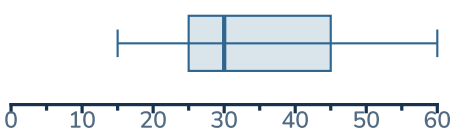
So the answer is 60 cm. Nothing is added or averaged — a box plot is read, not calculated.

Solutions (21 of 22)

Box Plots (continued)

Box plots (continued)

2. **Height of the sunflowers (cm)**



What is the lower quartile?

—

left whisker end: 15 cm

left edge of the box: **25 cm**

line inside the box: 30 cm

right edge of the box: 45 cm

right whisker end: 60 cm

25 cm

A box plot is five numbers drawn to scale — not a bar, and nothing here is a total. Read the five marks off one at a time, and the question answers itself.

Left whisker end: 15 cm — the smallest value.

Left edge of the box: 25 cm — the quarter mark — a quarter of the data is below it.

Line inside the box: 30 cm — the MEDIAN, not the mean and not the middle of the box's width.

Right edge of the box: 45 cm — the three-quarter mark.

Right whisker end: 60 cm — the largest value.

Now the question. It is asking for the left edge of the box, and that has already been read off — no arithmetic is owed.

So the answer is 25 cm. Nothing is added or averaged — a box plot is read, not calculated.

Check the Working

Check the working

1. **Noor says 4(x + 5) + 3(x + 7) comes to 7x + 41. Which is correct?**

7x + 420 | 7x + 41 | 7x + 26 | 5x + 27

Why?

4(x + 5) + 3(x + 7) = **7x + 41**

they wrote: **7x + 41**

Do not check by reading their line. Somebody else's working is the most persuasive thing on the page, and rereading it is how you end up agreeing with it — do the step yourself first, then compare.

On your own, and writing the step nobody writes down: 4(x + 5) + 3(x + 7) becomes 4x + 20 + 3x + 21.

Tidy that up and it is 7x + 41.

Now compare — and this time the two agree. The line on the page was already right, which is a finding, not a missing mistake. Some of them are.

Solutions (22 of 22)

Check the Working (continued)

Check the working (continued)

2. **Priya's answer to 4(x + 8) + 6(x + 8) is 10x + 80. Which is correct?**

10x + 1536 | 10x + 56 | 10x + 80 | 5x + 40

Why?

4(x + 8) + 6(x + 8) = **10x + 80**

they wrote: **10x + 80**

Do not check by reading their line. Somebody else's working is the most persuasive thing on the page, and rereading it is how you end up agreeing with it — do the step yourself first, then compare.

On your own, and writing the step nobody writes down: 4(x + 8) + 6(x + 8) becomes 4x + 32 + 6x + 48.

Tidy that up and it is 10x + 80.

Now compare — and this time the two agree. The line on the page was already right, which is a finding, not a missing mistake. Some of them are.