Grade 7 Foundation 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. $-28 + 3 =$ ____
2. $-36 + 37 =$ ____
3. $-87 + 78 =$ ____
4. $7 - 23 =$ ____
5. $-66 + 38 =$ ____
6. $-22 + 29 =$ ____
7. $-1 + 69 =$ ____
8. $-78 + 45 =$ ____
9. $-4 + 45 =$ ____
10. $-8 + 34 =$ ____
11. $-47 + 73 =$ ____
12. $-48 + 18 =$ ____
13. $-31 + 20 =$ ____
14. $29 - 45 =$ ____
15. $-42 + 37 =$ ____
16. $-17 + 19 =$ ____
17. $-22 + 39 =$ ____
18. $30 - 57 =$ ____
19. $-74 + 5 =$ ____
20. $-17 + 15 =$ ____
21. $-55 + 61 =$ ____
22. $-38 + 15 =$ ____
23. $-1 + 28 =$ ____
24. $-17 + 35 =$ ____
25. $-63 + 49 =$ ____
26. $-46 + 29 =$ ____
27. $-67 + 17 =$ ____
28. $-45 + 66 =$ ____
29. $-59 + 34 =$ ____
30. $-58 + 8 =$ ____
31. $-24 + 31 =$ ____
32. $-100 + 64 =$ ____
33. $-34 + 13 =$ ____
34. $-14 + 47 =$ ____
35. $-80 + 63 =$ ____
36. $-34 + 3 =$ ____
37. $-26 + 11 =$ ____
38. $3 - 52 =$ ____
39. $16 - 25 =$ ____
40. $-42 + 23 =$ ____
41. $-18 + 14 =$ ____
42. $39 - 40 =$ ____
43. $20 - 22 =$ ____
44. $-7 + 36 =$ ____
45. $-92 + 76 =$ ____
46. $-66 + 42 =$ ____
47. $-32 + 10 =$ ____
48. $21 - 48 =$ ____
49. $-12 + 19 =$ ____
50. $-24 + 43 =$ ____

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 $-18 \div 2 =$ ____
2 $-18 \div 3 =$ ____
3 $-40 \div (-4) =$ ____
4 $-72 \div 6 =$ ____
5 $-4 \times 5 =$ ____
6 $-60 \div (-10) =$ ____
7 $-72 \div 12 =$ ____
8 $-4 \times 7 =$ ____
9 $2 \times (-6) =$ ____
10 $-2 \times 6 =$ ____
11 $-99 \div (-9) =$ ____
12 $-3 \times 7 =$ ____
13 $3 \times (-4) =$ ____
14 $-7 \times 10 =$ ____
15 $-36 \div 3 =$ ____
16 $-49 \div (-7) =$ ____
17 $-60 \div 6 =$ ____
18 $-88 \div (-8) =$ ____
19 $7 \times (-8) =$ ____
20 $-6 \div 3 =$ ____
21 $-30 \div 10 =$ ____
22 $4 \times (-6) =$ ____
23 $2 \times (-10) =$ ____
24 $-25 \div (-5) =$ ____

3. Add and subtract integers

Add or subtract the integers.

25 $-97 + 6 =$ ____
26 $-21 + 25 =$ ____
27 $3 - 42 =$ ____
28 $-88 + 36 =$ ____
29 $-50 + 17 =$ ____
30 $-50 + 8 =$ ____
31 $-17 + 75 =$ ____
32 $-59 + 29 =$ ____
33 $-83 + 44 =$ ____
34 $-5 + 6 =$ ____
35 $17 - 30 =$ ____
36 $-58 + 28 =$ ____
37 $-7 + 27 =$ ____
38 $-20 + 78 =$ ____
39 $-11 + 28 =$ ____
40 $-72 + 39 =$ ____
41 $-15 + 1 =$ ____
42 $-79 + 73 =$ ____
43 $-82 + 10 =$ ____
44 $-7 + 17 =$ ____
45 $-50 + 52 =$ ____
46 $-93 + 13 =$ ____
47 $-30 + 20 =$ ____
48 $-88 + 33 =$ ____

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. $-60 + 42 =$ ____
46. $-7 + 4 =$ ____
47. $27 - 30 =$ ____
48. $-89 + 43 =$ ____
49. $-27 + 24 =$ ____
50. $-34 + 46 =$ ____
51. $11 - 45 =$ ____
52. $-66 + 19 =$ ____
53. $-33 + 32 =$ ____
54. $-11 + 6 =$ ____

Decimal Operations

WORKED EXAMPLE

$12.0 \div 3 = 4.0$

8. Multiply and divide decimals

Multiply or divide the decimals.

1 $2.49 \div 3 =$ _____
2 $25.2 \div 6 =$ _____
3 $2.5 \times 0.30 =$ _____
4 $55.5 \div 5 =$ _____
5 $30.6 \div 9 =$ _____
6 $54.0 \div 6 =$ _____
7 $24.92 \div 4 =$ _____
8 $84.6 \div 9 =$ _____
9 $6.0 \div 3 =$ _____
10 $49.7 \div 7 =$ _____
11 $4.1 \times 9 =$ _____
12 $54.9 \div 9 =$ _____
13 $0.5 \times 3.2 =$ _____
14 $58.88 \div 8 =$ _____
15 $16.06 \div 11 =$ _____
16 $6.8 \div 2 =$ _____
17 $0.6 \times 12 =$ _____
18 $8.2 \times 11 =$ _____
19 $29.4 \div 7 =$ _____
20 $75.2 \div 8 =$ _____
21 $5.5 \times 5 =$ _____
22 $43.2 \div 12 =$ _____
23 $9.9 \div 3 =$ _____
24 $79.1 \div 7 =$ _____
25 $8.3 \times 1.5 =$ _____
26 $23.2 \div 8 =$ _____
27 $24.5 \div 5 =$ _____
28 $23.64 \div 4 =$ _____
29 $2.97 \div 11 =$ _____
30 $10.6 \div 2 =$ _____
31 $36.0 \div 10 =$ _____
32 $28.29 \div 3 =$ _____
33 $39.6 \div 9 =$ _____
34 $0.4 \times 5 =$ _____
35 $0.6 \times 0.65 =$ _____
36 $41.5 \div 5 =$ _____
37 $2.52 \div 3 =$ _____
38 $30.03 \div 3 =$ _____
39 $60.8 \div 8 =$ _____
40 $0.78 \div 6 =$ _____
41 $75.0 \div 10 =$ _____
42 $7.6 \times 10 =$ _____
43 $118.8 \div 12 =$ _____
44 $46.8 \div 4 =$ _____
45 $24.60 \div 6 =$ _____
46 $50.5 \div 5 =$ _____
47 $11.27 \div 7 =$ _____
48 $6.3 \times 5 =$ _____
49 $0.1 \times 5 =$ _____
50 $74.9 \div 7 =$ _____

9. Multiplying and dividing integers

Multiply or divide. Remember what two negative signs make.

51 $-55 \div (-11) =$ _____
52 $-4 \times 4 =$ _____
53 $8 \times (-3) =$ _____
54 $-44 \div (-11) =$ _____
55 $-6 \times 2 =$ _____
56 $-20 \div (-5) =$ _____
57 $-54 \div 9 =$ _____
58 $-22 \div (-11) =$ _____
59 $-56 \div 7 =$ _____
60 $6 \times (-2) =$ _____

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 $\frac{6}{7} \times \frac{3}{6} =$ ___
2 $\frac{7}{8} \times \frac{1}{6} =$ ___
3 $\frac{5}{8} \div \frac{1}{8} =$ ___
4 $\frac{3}{6} \times \frac{1}{4} =$ ___
5 $\frac{6}{8} \times \frac{4}{6} =$ ___
6 $\frac{4}{8} \times \frac{3}{5} =$ ___
7 $\frac{5}{6} \div \frac{1}{7} =$ ___
8 $\frac{1}{4} \times \frac{4}{8} =$ ___
9 $\frac{1}{2} \times \frac{2}{4} =$ ___
10 $\frac{1}{4} \times \frac{1}{8} =$ ___
11 $\frac{1}{5} \div \frac{3}{8} =$ ___
12 $\frac{3}{5} \times \frac{4}{7} =$ ___
13 $\frac{4}{6} \times \frac{3}{8} =$ ___
14 $\frac{5}{6} \div \frac{1}{3} =$ ___
15 $\frac{3}{6} \times \frac{4}{8} =$ ___
16 $\frac{4}{6} \times \frac{3}{6} =$ ___
17 $\frac{7}{8} \times \frac{3}{5} =$ ___
18 $\frac{2}{4} \div \frac{5}{7} =$ ___
19 $\frac{2}{5} \times \frac{2}{8} =$ ___
20 $\frac{3}{6} \times \frac{1}{5} =$ ___
21 $\frac{2}{3} \div \frac{6}{7} =$ ___
22 $\frac{1}{7} \times \frac{1}{6} =$ ___
23 $\frac{5}{6} \times \frac{3}{5} =$ ___
24 $\frac{5}{6} \times \frac{1}{8} =$ ___
25 $\frac{1}{7} \div \frac{1}{6} =$ ___
26 $\frac{3}{8} \times \frac{3}{5} =$ ___
27 $\frac{2}{6} \times \frac{5}{7} =$ ___
28 $\frac{1}{8} \div \frac{5}{8} =$ ___
29 $\frac{1}{5} \times \frac{4}{8} =$ ___
30 $\frac{1}{4} \times \frac{4}{7} =$ ___
31 $\frac{2}{6} \times \frac{1}{8} =$ ___
32 $\frac{1}{3} \div \frac{4}{8} =$ ___
33 $\frac{1}{8} \times \frac{2}{6} =$ ___
34 $\frac{1}{4} \times \frac{1}{6} =$ ___
35 $\frac{1}{8} \div \frac{3}{5} =$ ___
36 $\frac{4}{5} \times \frac{4}{8} =$ ___
37 $\frac{6}{7} \times \frac{2}{5} =$ ___
38 $\frac{3}{8} \div \frac{6}{7} =$ ___
39 $\frac{1}{2} \times \frac{3}{5} =$ ___
40 $\frac{3}{4} \times \frac{5}{8} =$ ___
41 $\frac{3}{5} \times \frac{2}{6} =$ ___
42 $\frac{2}{5} \div \frac{3}{8} =$ ___
43 $\frac{1}{4} \times \frac{3}{4} =$ ___
44 $\frac{2}{3} \times \frac{4}{7} =$ ___

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 **9x + 20 − 8x − 19**

2 **1 + 5x + 5 + x**

3 **10x + 12 − 8x − 5**

4 **1 + 8x + 6 + x**

5 **1 + 5x + 2 + 3x**

6 **6x + 3x + 11**

7 **8x + 2 − 4x − 1**

8 **11 + 7x + 3 + 4x**

9 **7 + 3x + 10 + x**

10 **4 + 3x + 11 + 7x**

11 **8 + 5x + 8 + 5x**

12 **12 + 4x + 3 + 2x**

13 **8 + 8x + 5 + 2x**

14 **9x + 9 − 4x − 4**

15 **7 + 7x + 8 + 3x**

16 **6x + 5x + 1**

13. Multiply out brackets

Multiply out each bracket.

17 $3(3 + 3x)$

18 $2(7x + 3)$

19 $4(4x - 9)$

20 $6(x + 4)$

21 $2(5x - 4)$

22 $2(6x + 4)$

23 $7(7x + 2)$

24 $5(x - 5)$

25 $6(x - 4)$

26 $2(5x - 11)$

27 $2(7 + 8x)$

28 $4(5x - 3)$

29 $4(x + 3)$

30 $5(8x + 5)$

31 $2(3x - 5)$

32 $2(3x - 3)$

Solving Equations

WORKED EXAMPLE

$5x + 17 = 22$ 1

14. Solving equations

Solve each equation for x.

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

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 $7x + 11 < 4 \quad x \boxed{} -1$

2 $6x + 2 > -22 \quad x \boxed{} -4$

3 $-5x + 2 > -23 \quad x \boxed{} 5$

4 $3x + 6 \leq 24 \quad x \boxed{} 6$

5 $6x + 1 \leq -23 \quad x \boxed{} -4$

6 $7x + 3 < -74 \quad x \boxed{} -11$

7 $-8x + 6 < -34 \quad x \boxed{} 5$

8 $8x + 6 < 54 \quad x \boxed{} 6$

9 $9x + 8 > 35 \quad x \boxed{} 3$

10 $8x + 5 < -19 \quad x \boxed{} -3$

11 $2x + 9 > 77 \quad x \boxed{} 34$

12 $4x + 4 \geq -40 \quad x \boxed{} -11$

13 $4x + 12 \leq 76 \quad x \boxed{} 16$

14 $-3x + 5 > -10 \quad x \boxed{} 5$

16. Inequalities (continued)

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

15 $9x + 3 > -15 \quad x \square -2$

16 $2x + 12 \leq 38 \quad x \square 13$

17 $5x + 11 \leq -44 \quad x \square -11$

18 $2x + 1 \geq -69 \quad x \square -35$

19 $3x + 11 \leq 20 \quad x \square 3$

20 $2x + 1 < 29 \quad x \square 14$

21 $-9x + 10 \geq -44 \quad x \square 6$

22 $5x + 1 < -9 \quad x \square -2$

23 $5x + 3 \leq 33 \quad x \square 6$

24 $6x + 7 > 13 \quad x \square 1$

17. Multiply and divide decimals

Multiply or divide the decimals.

25 $6.7 \times 3 =$ _____

26 $31.5 \div 7 =$ _____

27 $19.50 \div 2 =$ _____

28 $39.6 \div 9 =$ _____

29 $14.4 \div 4 =$ _____

30 $13.8 \div 6 =$ _____

31 $5.8 \times 9 =$ _____

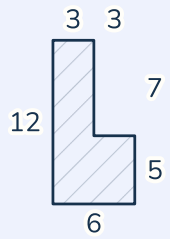
32 $26.4 \div 11 =$ _____

33 $32.8 \div 4 =$ _____

34 $64.8 \div 8 =$ _____

Area of Composite Shapes

WORKED EXAMPLE

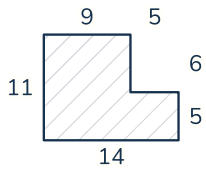


51 cm²

18. Area of composite figures

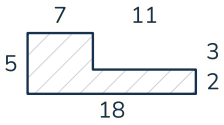
Find the area of each figure. All lengths are in centimeters.

1



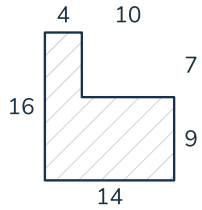
_____ cm²

2



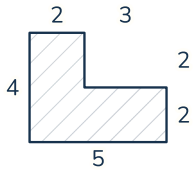
_____ cm²

3



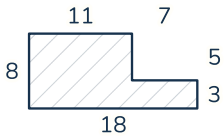
_____ cm²

4



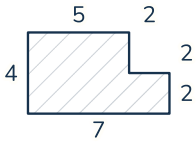
_____ cm²

5



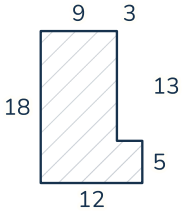
_____ cm²

6



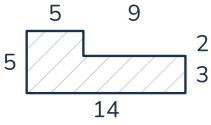
_____ cm²

7



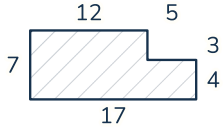
_____ cm²

8



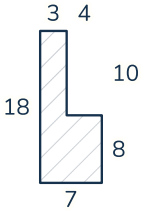
_____ cm²

9



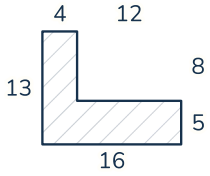
_____ cm²

10



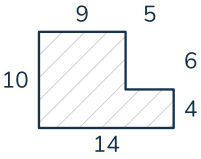
_____ cm²

11



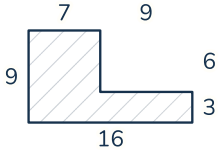
_____ cm²

12



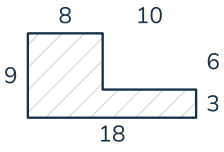
_____ cm²

13



_____ cm²

14



_____ cm²

19. Multiplying and dividing fractions

Multiply or divide. Write each answer in simplest form.

15 $\frac{5}{6} \times \frac{1}{2} = \_\_$

16 $\frac{5}{6} \times \frac{1}{8} = \_\_$

17 $\frac{2}{3} \div \frac{3}{5} = \_\_$

18 $\frac{1}{8} \times \frac{2}{6} = \_\_$

19 $\frac{2}{5} \times \frac{1}{6} = \_\_$

20 $\frac{5}{7} \times \frac{3}{8} = \_\_$

21 $\frac{5}{8} \div \frac{4}{5} = \_\_$

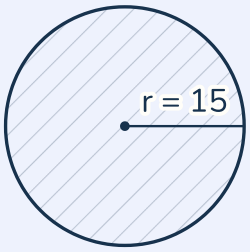
22 $\frac{2}{5} \times \frac{1}{2} = \_\_$

23 $\frac{3}{4} \times \frac{3}{4} = \_\_$

24 $\frac{2}{3} \times \frac{3}{5} = \_\_$

Area of a Circle

WORKED EXAMPLE

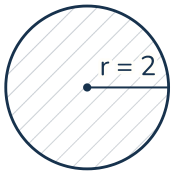


706.5 cm²

20. Area of a circle

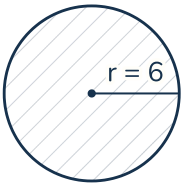
Find the area of each circle. Use π = 3.14.

1



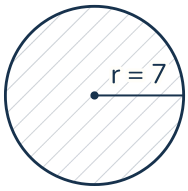
_____ cm²

2



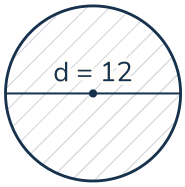
_____ cm²

3



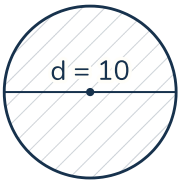
_____ cm²

4



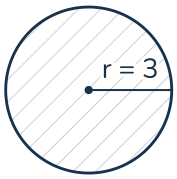
_____ cm²

5



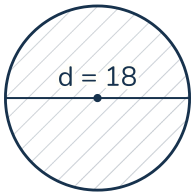
_____ cm²

6



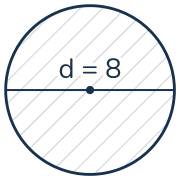
_____ cm²

7



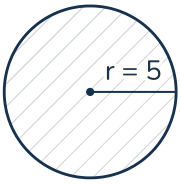
_____ cm²

8



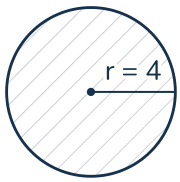
_____ cm²

9



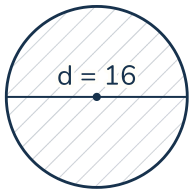
_____ cm²

10



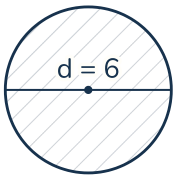
_____ cm²

11



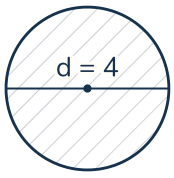
_____ cm²

12



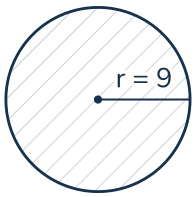
_____ cm²

13



_____ cm²

14



_____ cm²

21. Multiply out brackets

Multiply out each bracket.

15 $2(x + 2)$

16 $4(3x + 5)$

17 $3(7x + 11)$

18 $2(6x + 12)$

19 $4(5x - 3)$

20 $3(5x - 3)$

21 $2(7 + 5x)$

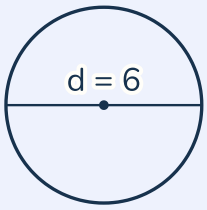
22 $3(5x + 7)$

23 $2(7x + 12)$

24 $6(2 + x)$

Circumference

WORKED EXAMPLE

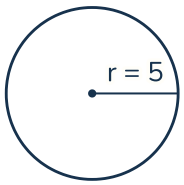


18.84 cm

22. Circumference of a circle

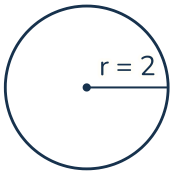
Find the circumference of each circle. Use π = 3.14.

1



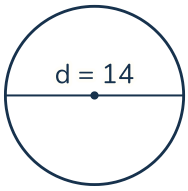
_____ cm

2



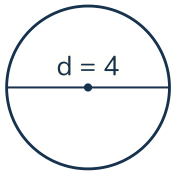
_____ cm

3



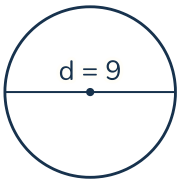
_____ cm

4



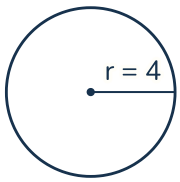
_____ cm

5



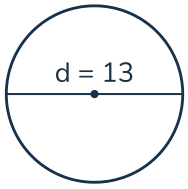
_____ cm

6



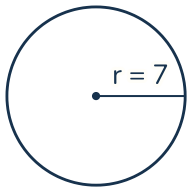
_____ cm

7



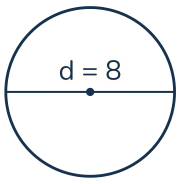
_____ cm

8



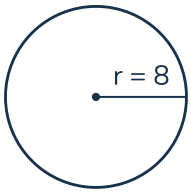
_____ cm

9



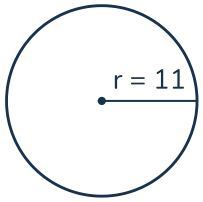
_____ cm

10



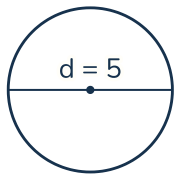
_____ cm

11



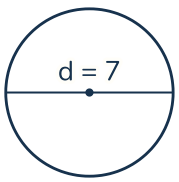
_____ cm

12



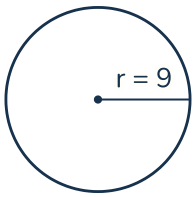
_____ cm

13



_____ cm

14



_____ cm

23. Collect like terms

Collect the like terms.

15 $3 + 7x + 5 + 4x$

16 $1 + 4x + 8 + 7x$

17 $12 + 5x + 6 + 5x$

18 $5 + 8x + 3 + 2x$

19 $2 + 4x + 1 + 8x$

20 $8 + 2x + 3 + x$

21 $5x + 17 - 3x - 10$

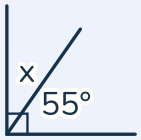
22 $5 + 7x + 1 + 4x$

23 $4 + 4x + 1 + 6x$

24 $11 + 3x + 6 + 4x$

Angle Pairs

WORKED EXAMPLE



35 degrees

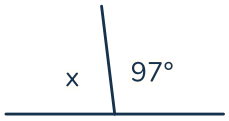
24. Missing angles in a pair

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

1

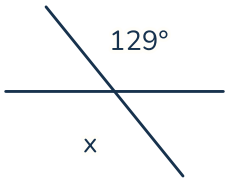
_____ degrees

2



_____ degrees

3

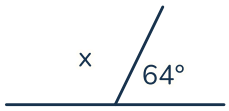


_____ degrees

4

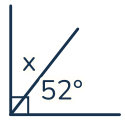
_____ degrees

5



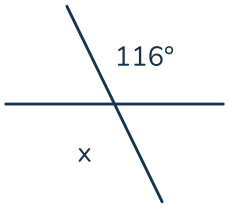
_____ degrees

6



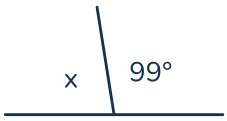
_____ degrees

7



_____ degrees

8

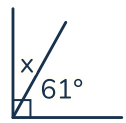


_____ degrees

9

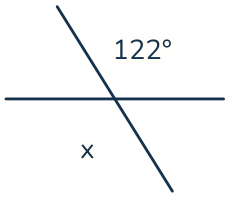
_____ degrees

10



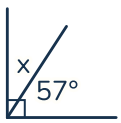
_____ degrees

11



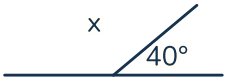
_____ degrees

12



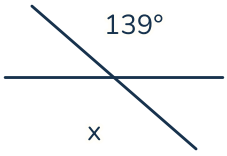
_____ degrees

13



_____ degrees

14



_____ degrees

25. Solving equations

Solve each equation for x.

15 $11x - 16 = 28$ ___

16 $6x - 10 = 8$ ___

17 $3x - 7 = 17$ ___

18 $7x + 24 = 38$ ___

19 $8x + 38 = 46$ ___

20 $5x + 25 = 40$ ___

21 $4x + 1 = 25$ ___

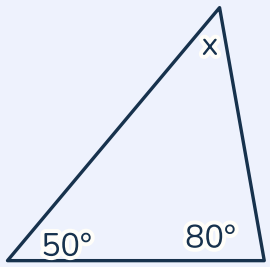
22 $11x + 20 = 42$ ___

23 $5x + 24 = 34$ ___

24 $7x + 31 = 38$ ___

Angles in a Triangle

WORKED EXAMPLE

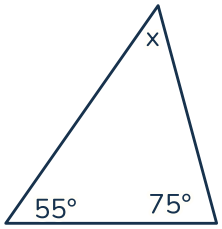


50 degrees

26. The third angle of a triangle

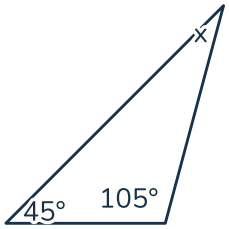
Find the angle marked x. Give each answer in degrees.

1



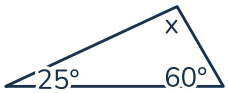
_____ degrees

2



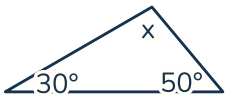
_____ degrees

3



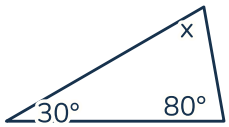
_____ degrees

4



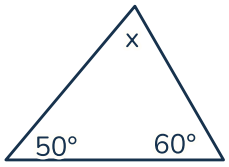
_____ degrees

5



_____ degrees

6

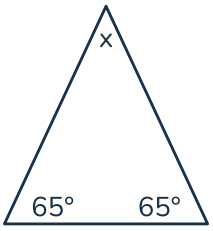


_____ degrees

7

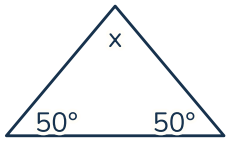
_____ degrees

8



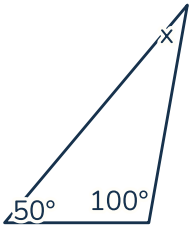
_____ degrees

9



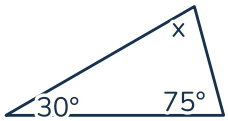
_____ degrees

10



_____ degrees

11

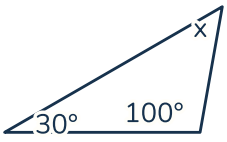


_____ degrees

12

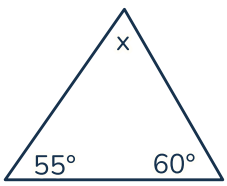
_____ degrees

13



_____ degrees

14



_____ degrees

27. Inequalities

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

15 $8x + 4 < -68 \quad x \square -9$

16 $7x + 12 \leq 19 \quad x \square 1$

17 $-9x + 10 < 28 \quad x \square -2$

18 $2x + 6 \leq 28 \quad x \square 11$

19 $2x + 7 \geq 9 \quad x \square 1$

20 $5x + 7 < 57 \quad x \square 10$

21 $-4x + 1 \geq -7 \quad x \square 2$

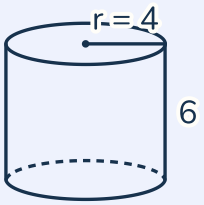
22 $5x + 11 \leq 26 \quad x \square 3$

23 $2x + 4 < 8 \quad x \square 2$

24 $5x + 7 \geq -38 \quad x \square -9$

Volume of Cylinders

WORKED EXAMPLE

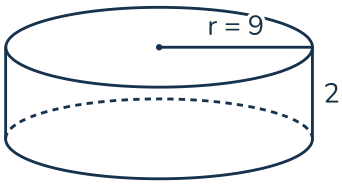


301.44

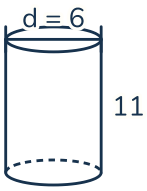
28. Volume of a cylinder

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

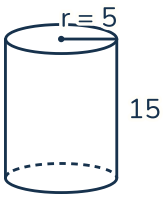
1



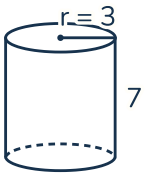
2



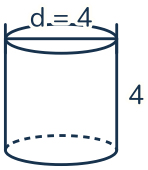
3



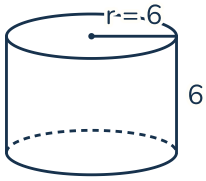
4



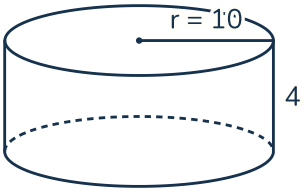
5



6



7



29. Add and subtract integers

Add or subtract the integers.

8 $-75 + 13 =$ _____

9 $-20 + 5 =$ _____

10 $-51 + 75 =$ _____

11 $-79 + 33 =$ _____

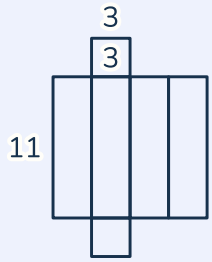
12 $-92 + 40 =$ _____

13 $-54 + 41 =$ _____

14 $-97 + 66 =$ _____

Surface Area

WORKED EXAMPLE

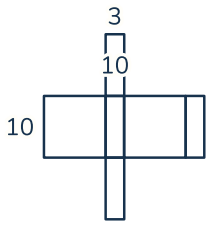


150 cm²

30. Surface area of a box

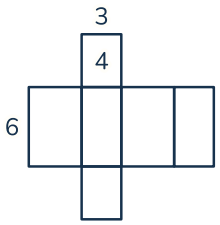
Find the surface area of each box. All lengths are in centimeters.

1



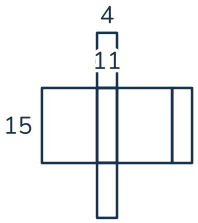
_____ cm²

2



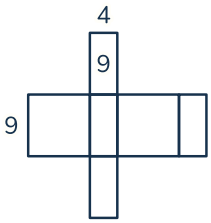
_____ cm²

3



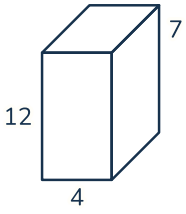
_____ cm²

4



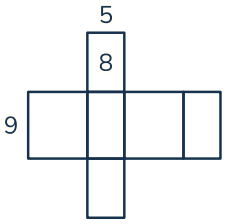
_____ cm²

5



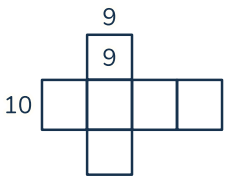
_____ cm²

6



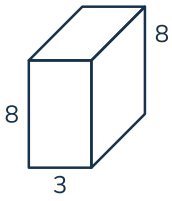
_____ cm²

7



_____ cm²

8



_____ cm²

31. Multiplying and dividing integers

Multiply or divide. Remember what two negative signs make.

9 $-45 \div (-9) =$ _____

10 $3 \times (-6) =$ _____

11 $10 \div (-5) =$ _____

12 $-2 \times 2 =$ _____

13 $-72 \div (-12) =$ _____

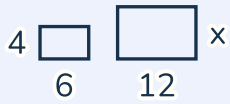
14 $-33 \div 3 =$ _____

15 $-16 \div (-2) =$ _____

16 $6 \times (-4) =$ _____

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.

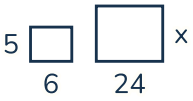
1

_____ cm

2

_____ cm

3



_____ cm

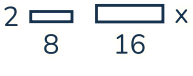
4

_____ cm

5

_____ cm

6



_____ cm

7

_____ cm

8

_____ cm

9

_____ cm

10

_____ cm

33. Unit rates

Find the unit rate for each.

11 **$42 for 6 = ___ each**

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

13 **$24 for 4 = ___ each**

14 **$9 for 3 = ___ each**

15 **$8 for 4 = ___ each**

16 **$24 for 6 = ___ each**

17 **$18 for 3 = ___ each**

18 **$28 for 4 = ___ each**

19 **$55 for 5 = ___ each**

20 **$96 for 8 = ___ each**

Probability

WORKED EXAMPLE

2 red, 4 blue, 6 green P(not blue) **2/3**

$2 + 4 + 6 = 12$

not blue: $12 - 4 = 8$

$\frac{8}{12} = \frac{2}{3}$

34. Probability of one event

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

1 **3 red, 9 blue** P(red) _____

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

3 **6 red, 4 blue, 2 green** P(blue) _____

4 **2 red, 5 blue, 5 green** P(green) _____

5 **5 red, 5 blue, 2 green** P(green) _____

6 **2 red, 7 blue, 3 green** P(not blue) _____

7 **8 red, 2 blue, 2 green** P(not red) _____

8 **2 red, 5 blue, 5 green** P(blue) _____

9 **5 red, 4 blue, 3 green** P(red) _____

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

11 **3 red, 9 blue** P(blue) _____

12 **3 red, 3 blue, 6 green** P(red) _____

13 **3 red, 7 blue, 2 green** P(red) _____

14 **2 red, 2 blue, 8 green** P(not green) _____

34. Probability of one event (continued)

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

15 3 red, 6 blue, 3 green P(green) _____

16 5 red, 7 blue P(red) _____

17 2 red, 5 blue, 5 green P(red) _____

18 2 red, 10 blue P(blue) _____

19 5 red, 2 blue, 5 green P(green) _____

20 3 red, 3 blue, 6 green P(blue) _____

21 4 red, 5 blue, 3 green P(not blue) _____

22 4 red, 3 blue, 5 green P(green) _____

23 3 red, 5 blue, 4 green P(red) _____

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

35. Percent

Work out each new amount.

25 75% more than 96 = _____

26 40% more than 60 = _____

27 80% more than 20 = _____

28 50% more than 60 = _____

29 60% more than 100 = _____

30 50% more than 132 = _____

31 40% more than 95 = _____

32 5% more than 40 = _____

33 40% more than 20 = _____

34 75% more than 196 = _____

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 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.

2 A bag contains 4 blue and 2 red marbles. One marble is drawn at random.

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

3 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.

4 A jar has 6 red buttons and 2 green buttons. One button is picked at random.

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

5 A bag has 6 green cubes and 2 blue cubes. One cube is picked at random.

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

6 A bag holds 9 yellow and 3 red chips. One is taken out without looking.

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

37. Multiply and divide decimals

Multiply or divide the decimals.

7 $14.80 \div 10 =$ _____

8 $32.1 \div 3 =$ _____

9 $5.5 \times 5 =$ _____

10 $0.1 \times 5 =$ _____

11 $18.9 \div 7 =$ _____

12 $0.5 \times 0.4 =$ _____

Mean, Median and Mode

WORKED EXAMPLE

Mean

23, 23, 43, 18, 28

23 + 23 + 43 + 18 + 28 = 135

135 ÷ 5 = 27

27

38. Mean, median, mode and range

Find the statistic named beside each set of numbers.

1 **Mean**
25, 25, 9, 8, 3

2 **Range**
15, 26, 5, 2, 2

3 **Mode**
17, 41, 22, 17, 18

4 **Mode**
31, 35, 9, 15, 15

5 **Median**
25, 7, 7, 15, 21

6 **Mean**
12, 8, 14, 9, 12

7 **Median**
31, 40, 22, 26, 26

8 **Mode**
17, 11, 15, 25, 17

9 **Median**
10, 20, 26, 26, 18

10 **Median**
25, 10, 23, 10, 17

11 **Mean**
38, 38, 13, 41, 15

12 **Median**
24, 20, 6, 6, 29

13 **Range**
27, 15, 37, 27, 29

14 **Range**
47, 8, 3, 29, 3

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

Find the statistic named beside each set of numbers.

15 **Mean**
17, 11, 15, 25, 17

16 **Median**
17, 1, 6, 9, 17

17 **Mean**
18, 13, 31, 2, 31

18 **Range**
23, 26, 39, 46, 46

19 **Range**
4, 16, 11, 3, 16

20 **Mode**
16, 5, 28, 23, 23

21 **Mode**
2, 43, 19, 19, 37

22 **Mode**
6, 3, 3, 23, 30

23 **Mode**
10, 20, 26, 26, 18

24 **Mean**
16, 5, 28, 23, 23

39. Multiplying and dividing fractions

Multiply or divide. Write each answer in simplest form.

25 $\frac{4}{5} \times \frac{1}{6} =$ ___

26 $\frac{1}{4} \times \frac{1}{2} =$ ___

27 $\frac{1}{7} \div \frac{1}{4} =$ ___

28 $\frac{6}{7} \times \frac{1}{7} =$ ___

29 $\frac{4}{7} \times \frac{3}{7} =$ ___

30 $\frac{4}{6} \times \frac{1}{5} =$ ___

31 $\frac{2}{8} \div \frac{1}{2} =$ ___

32 $\frac{2}{6} \times \frac{3}{6} =$ ___

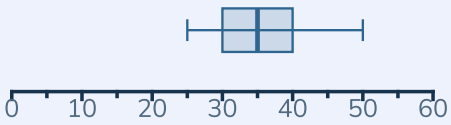
33 $\frac{4}{6} \times \frac{1}{8} =$ ___

34 $\frac{3}{8} \times \frac{3}{6} =$ ___

Box Plots

WORKED EXAMPLE

Rainfall each week (mm)



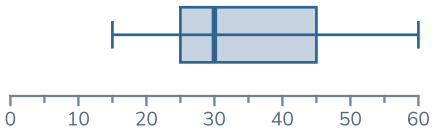
What is the median?

35

40. Box plots

Read each box plot and answer the question.

Height of the sunflowers (cm)



1 What is the largest value?

___

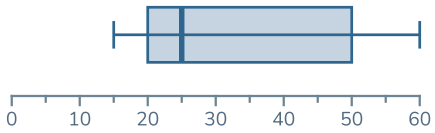
2 What is the lower quartile?

___

3 What is the upper quartile?

___

Minutes of homework (minutes)



4 What is the median?

___

41. Multiply out brackets

Multiply out each bracket.

5 $3(5 + 2x)$

6 $7(2x + 3)$

7 $2(8 + 6x)$

8 $2(7x - 4)$

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. −28 + 3 = −25
2. −36 + 37 = 1
3. −87 + 78 = −9
4. 7 − 23 = −16
5. −66 + 38 = −28
6. −22 + 29 = 7
7. −1 + 69 = 68
8. −78 + 45 = −33
9. −4 + 45 = 41
10. −8 + 34 = 26
11. −47 + 73 = 26
12. −48 + 18 = −30
13. −31 + 20 = −11
14. 29 − 45 = −16
15. −42 + 37 = −5
16. −17 + 19 = 2
17. −22 + 39 = 17
18. 30 − 57 = −27
19. −74 + 5 = −69
20. −17 + 15 = −2
21. −55 + 61 = 6
22. −38 + 15 = −23
23. −1 + 28 = 27
24. −17 + 35 = 18
25. −63 + 49 = −14
26. −46 + 29 = −17
27. −67 + 17 = −50
28. −45 + 66 = 21
29. −59 + 34 = −25
30. −58 + 8 = −50
31. −24 + 31 = 7
32. −100 + 64 = −36
33. −34 + 13 = −21
34. −14 + 47 = 33
35. −80 + 63 = −17
36. −34 + 3 = −31
37. −26 + 11 = −15
38. 3 − 52 = −49
39. 16 − 25 = −9
40. −42 + 23 = −19
41. −18 + 14 = −4
42. 39 − 40 = −1
43. 20 − 22 = −2
44. −7 + 36 = 29
45. −92 + 76 = −16
46. −66 + 42 = −24

Positive and Negative Numbers (continued)

Add and subtract integers (continued)

47. −32 + 10 = −22
48. 21 − 48 = −27
49. −12 + 19 = 7
50. −24 + 43 = 19

Multiplying and Dividing Integers

Multiplying and dividing integers

1. −18 ÷ 2 = −9
2. −18 ÷ 3 = −6
3. −40 ÷ −4 = 10
4. −72 ÷ 6 = −12
5. −4 × 5 = −20
6. −60 ÷ −10 = 6
7. −72 ÷ 12 = −6
8. −4 × 7 = −28
9. 2 × −6 = −12
10. −2 × 6 = −12
11. −99 ÷ −9 = 11
12. −3 × 7 = −21
13. 3 × −4 = −12
14. −7 × 10 = −70
15. −36 ÷ 3 = −12
16. −49 ÷ −7 = 7
17. −60 ÷ 6 = −10
18. −88 ÷ −8 = 11
19. 7 × −8 = −56
20. −6 ÷ 3 = −2
21. −30 ÷ 10 = −3
22. 4 × −6 = −24
23. 2 × −10 = −20
24. −25 ÷ −5 = 5

Add and subtract integers

25. −97 + 6 = −91
26. −21 + 25 = 4
27. 3 − 42 = −39
28. −88 + 36 = −52
29. −50 + 17 = −33
30. −50 + 8 = −42
31. −17 + 75 = 58
32. −59 + 29 = −30
33. −83 + 44 = −39
34. −5 + 6 = 1
35. 17 − 30 = −13
36. −58 + 28 = −30
37. −7 + 27 = 20
38. −20 + 78 = 58

Answer Key (2 of 9)

Multiplying and Dividing Integers (continued)

Add and subtract integers (continued)

39. −11 + 28 = 17
40. −72 + 39 = −33
41. −15 + 1 = −14
42. −79 + 73 = −6
43. −82 + 10 = −72
44. −7 + 17 = 10
45. −50 + 52 = 2
46. −93 + 13 = −80
47. −30 + 20 = −10
48. −88 + 33 = −55

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. −60 + 42 = −18
46. −7 + 4 = −3
47. 27 − 30 = −3
48. −89 + 43 = −46
49. −27 + 24 = −3
50. −34 + 46 = 12
51. 11 − 45 = −34
52. −66 + 19 = −47

Percent Problems (continued)

Add and subtract integers (continued)

53. −33 + 32 = −1
54. −11 + 6 = −5

Decimal Operations

Multiply and divide decimals

1. 2.49 ÷ 3 = 0.83
2. 25.2 ÷ 6 = 4.2
3. 2.5 × 0.30 = 0.750
4. 55.5 ÷ 5 = 11.1
5. 30.6 ÷ 9 = 3.4
6. 54.0 ÷ 6 = 9.0
7. 24.92 ÷ 4 = 6.23
8. 84.6 ÷ 9 = 9.4
9. 6.0 ÷ 3 = 2.0
10. 49.7 ÷ 7 = 7.1
11. 4.1 × 9 = 36.9
12. 54.9 ÷ 9 = 6.1
13. 0.5 × 3.2 = 1.60
14. 58.88 ÷ 8 = 7.36
15. 16.06 ÷ 11 = 1.46
16. 6.8 ÷ 2 = 3.4
17. 0.6 × 12 = 7.2
18. 8.2 × 11 = 90.2
19. 29.4 ÷ 7 = 4.2
20. 75.2 ÷ 8 = 9.4
21. 5.5 × 5 = 27.5
22. 43.2 ÷ 12 = 3.6
23. 9.9 ÷ 3 = 3.3
24. 79.1 ÷ 7 = 11.3
25. 8.3 × 1.5 = 12.45
26. 23.2 ÷ 8 = 2.9
27. 24.5 ÷ 5 = 4.9
28. 23.64 ÷ 4 = 5.91
29. 2.97 ÷ 11 = 0.27
30. 10.6 ÷ 2 = 5.3
31. 36.0 ÷ 10 = 3.6
32. 28.29 ÷ 3 = 9.43
33. 39.6 ÷ 9 = 4.4
34. 0.4 × 5 = 2.0
35. 0.6 × 0.65 = 0.390
36. 41.5 ÷ 5 = 8.3
37. 2.52 ÷ 3 = 0.84
38. 30.03 ÷ 3 = 10.01
39. 60.8 ÷ 8 = 7.6
40. 0.78 ÷ 6 = 0.13
41. 75.0 ÷ 10 = 7.5

Answer Key (4 of 9)

Decimal Operations (continued)

Multiply and divide decimals (continued)

42. 7.6 × 10 = 76.0
43. 118.8 ÷ 12 = 9.9
44. 46.8 ÷ 4 = 11.7
45. 24.60 ÷ 6 = 4.10
46. 50.5 ÷ 5 = 10.1
47. 11.27 ÷ 7 = 1.61
48. 6.3 × 5 = 31.5
49. 0.1 × 5 = 0.5
50. 74.9 ÷ 7 = 10.7

Multiplying and dividing integers

51. −55 ÷ −11 = 5
52. −4 × 4 = −16
53. 8 × −3 = −24
54. −44 ÷ −11 = 4
55. −6 × 2 = −12
56. −20 ÷ −5 = 4
57. −54 ÷ 9 = −6
58. −22 ÷ −11 = 2
59. −56 ÷ 7 = −8
60. 6 × −2 = −12

Fraction Operations

Multiplying and dividing fractions

1. 6/7 × 3/6 = 3/7
2. 7/8 × 1/6 = 7/48
3. 5/8 ÷ 1/8 = 5
4. 3/6 × 1/4 = 1/8
5. 6/8 × 4/6 = 1/2
6. 4/8 × 3/5 = 3/10
7. 5/6 ÷ 1/7 = 35/6
8. 1/4 × 4/8 = 1/8
9. 1/2 × 2/4 = 1/4
10. 1/4 × 1/8 = 1/32
11. 1/5 ÷ 3/8 = 8/15
12. 3/5 × 4/7 = 12/35
13. 4/6 × 3/8 = 1/4
14. 5/6 ÷ 1/3 = 5/2
15. 3/6 × 4/8 = 1/4
16. 4/6 × 3/6 = 1/3
17. 7/8 × 3/5 = 21/40
18. 2/4 ÷ 5/7 = 7/10
19. 2/5 × 2/8 = 1/10
20. 3/6 × 1/5 = 1/10
21. 2/3 ÷ 6/7 = 7/9
22. 1/7 × 1/6 = 1/42
23. 5/6 × 3/5 = 1/2

Fraction Operations (continued)

Multiplying and dividing fractions (continued)

24. 5/6 × 1/8 = 5/48
25. 1/7 ÷ 1/6 = 6/7
26. 3/8 × 3/5 = 9/40
27. 2/6 × 5/7 = 5/21
28. 1/8 ÷ 5/8 = 1/5
29. 1/5 × 4/8 = 1/10
30. 1/4 × 4/7 = 1/7
31. 2/6 × 1/8 = 1/24
32. 1/3 ÷ 4/8 = 2/3
33. 1/8 × 2/6 = 1/24
34. 1/4 × 1/6 = 1/24
35. 1/8 ÷ 3/5 = 5/24
36. 4/5 × 4/8 = 2/5
37. 6/7 × 2/5 = 12/35
38. 3/8 ÷ 6/7 = 7/16
39. 1/2 × 3/5 = 3/10
40. 3/4 × 5/8 = 15/32
41. 3/5 × 2/6 = 1/5
42. 2/5 ÷ 3/8 = 16/15
43. 1/4 × 3/4 = 3/16
44. 2/3 × 4/7 = 8/21

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. 9x + 20 − 8x − 19 → 1x + 1
2. 1 + 5x + 5 + x → 6x + 6
3. 10x + 12 − 8x − 5 → 2x + 7
4. 1 + 8x + 6 + x → 9x + 7
5. 1 + 5x + 2 + 3x → 8x + 3
6. 6x + 3x + 11 → 9x + 11
7. 8x + 2 − 4x − 1 → 4x + 1
8. 11 + 7x + 3 + 4x → 11x + 14
9. 7 + 3x + 10 + x → 4x + 17
10. 4 + 3x + 11 + 7x → 10x + 15
11. 8 + 5x + 8 + 5x → 10x + 16

Answer Key (5 of 9)

Like Terms and the Distributive Property (continued)

Collect like terms (continued)

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

Multiply out brackets

17. 3(3 + 3x) → 9x + 9
18. 2(7x + 3) → 14x + 6
19. 4(4x – 9) → 16x – 36
20. 6(x + 4) → 6x + 24
21. 2(5x – 4) → 10x – 8
22. 2(6x + 4) → 12x + 8
23. 7(7x + 2) → 49x + 14
24. 5(x – 5) → 5x – 25
25. 6(x – 4) → 6x – 24
26. 2(5x – 11) → 10x – 22
27. 2(7 + 8x) → 16x + 14
28. 4(5x – 3) → 20x – 12
29. 4(x + 3) → 4x + 12
30. 5(8x + 5) → 40x + 25
31. 2(3x – 5) → 6x – 10
32. 2(3x – 3) → 6x – 6

Solving Equations

Solving equations

1. 5x + 13 = 18 → x = 1
2. 9x – 10 = 8 → x = 2
3. 5x – 20 = 5 → x = 5
4. 5x + 4 = 19 → x = 3
5. 5x – 18 = 2 → x = 4
6. 5x + 31 = 46 → x = 3
7. 5x + 23 = 48 → x = 5
8. 3x – 9 = 3 → x = 4
9. 5x + 16 = 36 → x = 4
10. 6x + 14 = 20 → x = 1
11. 4x + 20 = 40 → x = 5
12. 4x + 5 = 9 → x = 1
13. 9x + 1 = 10 → x = 1
14. 5x + 15 = 50 → x = 7
15. 12x + 2 = 50 → x = 4
16. 4x + 21 = 29 → x = 2
17. 3x + 19 = 28 → x = 3
18. 7x + 6 = 41 → x = 5
19. 10x – 14 = 6 → x = 2
20. 2x + 19 = 21 → x = 1
21. 6x – 37 = 5 → x = 7

Solving Equations (continued)

Solving equations (continued)

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

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. 7x + 11 < 4 → x < –1
2. 6x + 2 > –22 → x > –4
3. –5x + 2 > –23 → x < 5

Answer Key (6 of 9)

Inequalities (continued)

Inequalities (continued)

4. $3x + 6 \leq 24 \rightarrow x \leq 6$
5. $6x + 1 \leq -23 \rightarrow x \leq -4$
6. $7x + 3 < -74 \rightarrow x < -11$
7. $-8x + 6 < -34 \rightarrow x > 5$
8. $8x + 6 < 54 \rightarrow x < 6$
9. $9x + 8 > 35 \rightarrow x > 3$
10. $8x + 5 < -19 \rightarrow x < -3$
11. $2x + 9 > 77 \rightarrow x > 34$
12. $4x + 4 \geq -40 \rightarrow x \geq -11$
13. $4x + 12 \leq 76 \rightarrow x \leq 16$
14. $-3x + 5 > -10 \rightarrow x < 5$
15. $9x + 3 > -15 \rightarrow x > -2$
16. $2x + 12 \leq 38 \rightarrow x \leq 13$
17. $5x + 11 \leq -44 \rightarrow x \leq -11$
18. $2x + 1 \geq -69 \rightarrow x \geq -35$
19. $3x + 11 \leq 20 \rightarrow x \leq 3$
20. $2x + 1 < 29 \rightarrow x < 14$
21. $-9x + 10 \geq -44 \rightarrow x \leq 6$
22. $5x + 1 < -9 \rightarrow x < -2$
23. $5x + 3 \leq 33 \rightarrow x \leq 6$
24. $6x + 7 > 13 \rightarrow x > 1$

Multiply and divide decimals

25. $6.7 \times 3 = 20.1$
26. $31.5 \div 7 = 4.5$
27. $19.50 \div 2 = 9.75$
28. $39.6 \div 9 = 4.4$
29. $14.4 \div 4 = 3.6$
30. $13.8 \div 6 = 2.3$
31. $5.8 \times 9 = 52.2$
32. $26.4 \div 11 = 2.4$
33. $32.8 \div 4 = 8.2$
34. $64.8 \div 8 = 8.1$

Area of Composite Shapes

Area of composite figures

1. 14×11 less 5×6: 124 cm²
2. 18×5 less 11×3: 57 cm²
3. 14×16 less 10×7: 154 cm²
4. 5×4 less 3×2: 14 cm²
5. 18×8 less 7×5: 109 cm²
6. 7×4 less 2×2: 24 cm²
7. 12×18 less 3×13: 177 cm²
8. 14×5 less 9×2: 52 cm²
9. 17×7 less 5×3: 104 cm²
10. 7×18 less 4×10: 86 cm²
11. 16×13 less 12×8: 112 cm²

Area of Composite Shapes (continued)

Area of composite figures (continued)

12. 14×10 less 5×6: 110 cm²
13. 16×9 less 9×6: 90 cm²
14. 18×9 less 10×6: 102 cm²

Multiplying and dividing fractions

15. $5/6 \times 1/2 = 5/12$
16. $5/6 \times 1/8 = 5/48$
17. $2/3 \div 3/5 = 10/9$
18. $1/8 \times 2/6 = 1/24$
19. $2/5 \times 1/6 = 1/15$
20. $5/7 \times 3/8 = 15/56$
21. $5/8 \div 4/5 = 25/32$
22. $2/5 \times 1/2 = 1/5$
23. $3/4 \times 3/4 = 9/16$
24. $2/3 \times 3/5 = 2/5$

Area of a Circle

Area of a circle

1. r = 2: 12.56 cm²
2. r = 6: 113.04 cm²
3. r = 7: 153.86 cm²
4. d = 12: 113.04 cm²
5. d = 10: 78.5 cm²
6. r = 3: 28.26 cm²
7. d = 18: 254.34 cm²
8. d = 8: 50.24 cm²
9. r = 5: 78.5 cm²
10. r = 4: 50.24 cm²
11. d = 16: 200.96 cm²
12. d = 6: 28.26 cm²
13. d = 4: 12.56 cm²
14. r = 9: 254.34 cm²

Multiply out brackets

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

Circumference

Circumference of a circle

1. r = 5: 31.4 cm

Answer Key (7 of 9)

Circumference (continued)

Circumference of a circle (continued)

2. r = 2: 12.56 cm
3. d = 14: 43.96 cm
4. d = 4: 12.56 cm
5. d = 9: 28.26 cm
6. r = 4: 25.12 cm
7. d = 13: 40.82 cm
8. r = 7: 43.96 cm
9. d = 8: 25.12 cm
10. r = 8: 50.24 cm
11. r = 11: 69.08 cm
12. d = 5: 15.7 cm
13. d = 7: 21.98 cm
14. r = 9: 56.52 cm

Collect like terms

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

Angle Pairs

Missing angles in a pair

1. supplementary, 83°: 97°
2. supplementary, 97°: 83°
3. vertical, 129°: 129°
4. supplementary, 75°: 105°
5. supplementary, 64°: 116°
6. complementary, 52°: 38°
7. vertical, 116°: 116°
8. supplementary, 99°: 81°
9. supplementary, 144°: 36°
10. complementary, 61°: 29°
11. vertical, 122°: 122°
12. complementary, 57°: 33°
13. supplementary, 40°: 140°
14. vertical, 139°: 139°

Solving equations

15. 11x − 16 = 28 → x = 4
16. 6x − 10 = 8 → x = 3
17. 3x − 7 = 17 → x = 8
18. 7x + 24 = 38 → x = 2

Angle Pairs (continued)

Solving equations (continued)

19. 8x + 38 = 46 → x = 1
20. 5x + 25 = 40 → x = 3
21. 4x + 1 = 25 → x = 6
22. 11x + 20 = 42 → x = 2
23. 5x + 24 = 34 → x = 2
24. 7x + 31 = 38 → x = 1

Angles in a Triangle

The third angle of a triangle

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

Inequalities

15. 8x + 4 < −68 → x < −9
16. 7x + 12 ≤ 19 → x ≤ 1
17. −9x + 10 < 28 → x > −2
18. 2x + 6 ≤ 28 → x ≤ 11
19. 2x + 7 ≥ 9 → x ≥ 1
20. 5x + 7 < 57 → x < 10
21. −4x + 1 ≥ −7 → x ≤ 2
22. 5x + 11 ≤ 26 → x ≤ 3
23. 2x + 4 < 8 → x < 2
24. 5x + 7 ≥ −38 → x ≥ −9

Volume of Cylinders

Volume of a cylinder

1. r = 9, h = 2: 508.68 cm³
2. d = 6, h = 11: 310.86 cm³
3. r = 5, h = 15: 1177.5 cm³
4. r = 3, h = 7: 197.82 cm³
5. d = 4, h = 4: 50.24 cm³
6. r = 6, h = 6: 678.24 cm³
7. r = 10, h = 4: 1256 cm³

Add and subtract integers

8. −75 + 13 = −62

Answer Key (8 of 9)

Volume of Cylinders (continued)

Add and subtract integers (continued)

9. −20 + 5 = −15
10. −51 + 75 = 24
11. −79 + 33 = −46
12. −92 + 40 = −52
13. −54 + 41 = −13
14. −97 + 66 = −31

Surface Area

Surface area of a box

1. 3×10×10 → 2(30 + 30 + 100): 320 cm²
2. 3×4×6 → 2(12 + 18 + 24): 108 cm²
3. 4×11×15 → 2(44 + 60 + 165): 538 cm²
4. 4×9×9 → 2(36 + 36 + 81): 306 cm²
5. 4×7×12 → 2(28 + 48 + 84): 320 cm²
6. 5×8×9 → 2(40 + 45 + 72): 314 cm²
7. 9×9×10 → 2(81 + 90 + 90): 522 cm²
8. 3×8×8 → 2(24 + 24 + 64): 224 cm²

Multiplying and dividing integers

9. −45 ÷ −9 = 5
10. 3 × −6 = −18
11. 10 ÷ −5 = −2
12. −2 × 2 = −4
13. −72 ÷ −12 = 6
14. −33 ÷ 3 = −11
15. −16 ÷ −2 = 8
16. 6 × −4 = −24

Similar Figures

Similar figures and scale

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

Unit rates

11. $42 for 6 = $7 each
12. $12 for 3 = $4 each
13. $24 for 4 = $6 each
14. $9 for 3 = $3 each
15. $8 for 4 = $2 each
16. $24 for 6 = $4 each

Similar Figures (continued)

Unit rates (continued)

17. $18 for 3 = $6 each
18. $28 for 4 = $7 each
19. $55 for 5 = $11 each
20. $96 for 8 = $12 each

Probability

Probability of one event

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

Percent

25. 75% more than 96 = 168
26. 40% more than 60 = 84
27. 80% more than 20 = 36
28. 50% more than 60 = 90
29. 60% more than 100 = 160
30. 50% more than 132 = 198
31. 40% more than 95 = 133
32. 5% more than 40 = 42
33. 40% more than 20 = 28
34. 75% more than 196 = 343

Probability Word Problems

Word problems: probability

1. 5 out of 12 = 5/12

Answer Key (9 of 9)

Probability Word Problems (continued)

Word problems: probability (continued)

2. not blue: 2 out of 6 = 1/3
3. not green: 6 out of 8 = 3/4
4. not red: 2 out of 8 = 1/4
5. not green: 2 out of 8 = 1/4
6. not yellow: 3 out of 12 = 1/4

Multiply and divide decimals

7. 14.80 ÷ 10 = 1.48
8. 32.1 ÷ 3 = 10.7
9. 5.5 × 5 = 27.5
10. 0.1 × 5 = 0.5
11. 18.9 ÷ 7 = 2.7
12. 0.5 × 0.4 = 0.20

Mean, Median and Mode

Mean, median, mode and range

1. Mean of 25, 25, 9, 8, 3 = 14
2. Range of 15, 26, 5, 2, 2 = 24
3. Mode of 17, 41, 22, 17, 18 = 17
4. Mode of 31, 35, 9, 15, 15 = 15
5. Median of 25, 7, 7, 15, 21 = 15
6. Mean of 12, 8, 14, 9, 12 = 11
7. Median of 31, 40, 22, 26, 26 = 26
8. Mode of 17, 11, 15, 25, 17 = 17
9. Median of 10, 20, 26, 26, 18 = 20
10. Median of 25, 10, 23, 10, 17 = 17
11. Mean of 38, 38, 13, 41, 15 = 29
12. Median of 24, 20, 6, 6, 29 = 20
13. Range of 27, 15, 37, 27, 29 = 22
14. Range of 47, 8, 3, 29, 3 = 44
15. Mean of 17, 11, 15, 25, 17 = 17
16. Median of 17, 1, 6, 9, 17 = 9
17. Mean of 18, 13, 31, 2, 31 = 19
18. Range of 23, 26, 39, 46, 46 = 23
19. Range of 4, 16, 11, 3, 16 = 13
20. Mode of 16, 5, 28, 23, 23 = 23
21. Mode of 2, 43, 19, 19, 37 = 19
22. Mode of 6, 3, 3, 23, 30 = 3
23. Mode of 10, 20, 26, 26, 18 = 26
24. Mean of 16, 5, 28, 23, 23 = 19

Multiplying and dividing fractions

25. 4/5 × 1/6 = 2/15
26. 1/4 × 1/2 = 1/8
27. 1/7 ÷ 1/4 = 4/7
28. 6/7 × 1/7 = 6/49

Mean, Median and Mode (continued)

Multiplying and dividing fractions (continued)

29. 4/7 × 3/7 = 12/49
30. 4/6 × 1/5 = 2/15
31. 2/8 ÷ 1/2 = 1/2
32. 2/6 × 3/6 = 1/6
33. 4/6 × 1/8 = 1/12
34. 3/8 × 3/6 = 3/16

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. 3(5 + 2x) → 6x + 15
6. 7(2x + 3) → 14x + 21
7. 2(8 + 6x) → 12x + 16
8. 2(7x – 4) → 14x – 8

Check the Working

Check the working

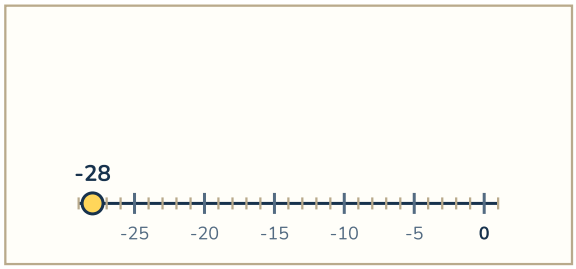
1. 4(x + 5) + 3(x + 7) = 7x + 41, which is what was written — this line is correct
2. 4(x + 8) + 6(x + 8) = 10x + 80, which is what was written — this line is correct
3. 5(x + 6) + 3(x + 5) = 8x + 45, which is what was written — this line is correct
4. 5(x + 6) + 2(x + 5) = 7x + 40, which is what was 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 20)

Positive and Negative Numbers

Add and subtract integers

1. **−28 + 3 = ____**

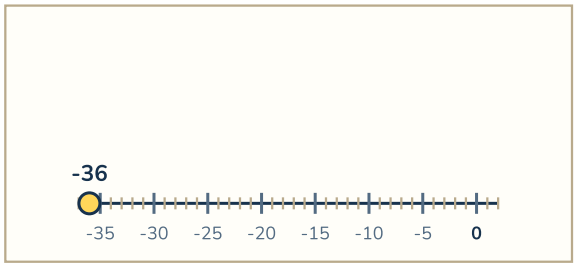


Put a counter on -28. Everything else is which way it slides and how far.

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

So slide 3 to the right, from -28 to -25. (-28) + 3 = -25.

2. **−36 + 37 = ____**



Put a counter on -36. Everything else is which way it slides and how far.

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

So slide 37 to the right, from -36 to 1. (-36) + 37 = 1.

Multiplying and Dividing Integers

Multiplying and dividing integers

1. **−18 ÷ 2 = ____**

(-18) ÷ 2 = **?**

18 ÷ 2 = **9**

signs: (-18) 2 →

minus

(-18) ÷ 2 = **(-9)**

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: 18 ÷ 2 = 9. Ordinary times-tables — the negatives play no part in the size.

Now the sign. One number is negative and one is positive — a single minus, with nothing to cancel it. Different signs give a MINUS.

Size 9, sign minus — so (-18) ÷ 2 = (-9).

Solutions (2 of 20)

Multiplying and Dividing Integers (continued)

Multiplying and dividing integers (continued)

2. **−18 ÷ 3 = ___**

(-18) ÷ 3 = **?**

18 ÷ 3 = **6**

signs: (-18) 3 →

minus

(-18) ÷ 3 = **(-6)**

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: 18 ÷ 3 = 6. Ordinary times-tables — the negatives play no part in the size.

Now the sign. One number is negative and one is positive — a single minus, with nothing to cancel it. Different signs give a MINUS.

Size 6, sign minus — so (-18) ÷ 3 = (-6).

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 20)

Percent Problems (continued)

Percent (continued)

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

$$1\% \text{ of } 25 = \mathbf{0.25}$$
$$0.25 \times 20 = \mathbf{5}$$
$$25 + 5 = \mathbf{30}$$

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. **2.49 ÷ 3 = _____**

$$2.49 \div \mathbf{3}$$
$$2.49 \div 3 = \mathbf{0.83}$$
$$0.83 \times 3 = \mathbf{2.49}$$

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: 2.49 ÷ 3 = 0.83.

Check it the other way round: 0.83 × 3 should give 2.49 back. A point in the wrong place fails this instantly — 2.49 and a tenth of it are not close.

2. **25.2 ÷ 6 = ____**

$$25.2 \div \mathbf{6}$$
$$25.2 \div 6 = \mathbf{4.2}$$
$$4.2 \times 6 = \mathbf{25.2}$$

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: 25.2 ÷ 6 = 4.2.

Check it the other way round: 4.2 × 6 should give 25.2 back. A point in the wrong place fails this instantly — 25.2 and a tenth of it are not close.

Solutions (4 of 20)

Fraction Operations

Multiplying and dividing fractions

1. $\frac{6}{7} \times \frac{3}{6} = \text{—}$

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

top: $6 \times 3 = 18$

$$\frac{6}{7} \times \frac{3}{6} = \frac{18}{42}$$

$$\frac{18}{42} = \frac{3}{7}$$

Multiplying, not adding — so no common denominator, and nothing has to be cut into matching pieces first. Tops with tops, bottoms with bottoms.

Multiply the two top numbers: $6 \times 3 = 18$.

Multiply the two bottom numbers: $7 \times 6 = 42$.

18/42 simplifies to 3/7.

2. $\frac{7}{8} \times \frac{1}{6} = \text{—}$

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

top: $7 \times 1 = 7$

$$\frac{7}{8} \times \frac{1}{6} = \frac{7}{48}$$

Multiplying, not adding — so no common denominator, and nothing has to be cut into matching pieces first. Tops with tops, bottoms with bottoms.

Multiply the two top numbers: $7 \times 1 = 7$.

Multiply the two bottom numbers: $8 \times 6 = 48$.

Like Terms and the Distributive Property

Collect like terms

1. **$9x + 20 - 8x - 19$**

$9x + 20 - 8x - 19$

$9 - 8 = 1$

$20 - 19 = 1$

$x + 1$

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 9x and −8x, and the numbers are 20 and −19.

Add up the x pile, keeping the signs: $9 - 8 = 1$, so x.

Then the number pile, on its own: $20 - 19 = 1$.

So it is $x + 1$ — and that is finished, even though it is still two things. Squashing them into 2x would be answering "1 whats and 1 whats?", and there is no answer to that until somebody says what x is.

Solutions (5 of 20)

Like Terms and the Distributive Property (continued)

Collect like terms (continued)

2. **1 + 5x + 5 + x**

1 + 5x + 5 + x

5 + 1 = **6**

1 + 5 = **6**

6x + **6**

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 5x and x, and the numbers are 1 and 5.

Add up the x pile, keeping the signs: 5 + 1 = 6, so 6x.

Then the number pile, on its own: 1 + 5 = 6.

So it is 6x + 6 — and that is finished, even though it is still two things. Squashing them into 12x would be answering "6 whats and 6 whats?", and there is no answer to that until somebody says what x is.

Multiply out brackets

17. **3(3 + 3x)**

3(3 + 3x)

3 × 3 = **9**

3 × 3x = **9x**

9x + **9**

The 3 outside multiplies EVERYTHING inside the bracket, not just the thing next to it. Draw an arrow from the 3 to each of the two terms before working anything out — that is what stops one of them being left behind.

First arrow: 3 × 3 = 9.

Second arrow: 3 × 3x = 9x.

Put the two together: 9x + 9. 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 (6 of 20)

Like Terms and the Distributive Property (continued)

Multiply out brackets (continued)

18. **2(7x + 3)**

$$\begin{aligned} \mathbf{2(7x + 3)} & \\ 2 \times 7x &= \mathbf{14x} \\ 2 \times 3 &= \mathbf{6} \\ \mathbf{14x} &+ \mathbf{6} \end{aligned}$$

The 2 outside multiplies EVERYTHING inside the bracket, not just the thing next to it. Draw an arrow from the 2 to each of the two terms before working anything out — that is what stops one of them being left behind.

First arrow: $2 \times 7x = 14x$.

Second arrow: $2 \times 3 = 6$.

Put the two together: $14x + 6$. 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.

Solving Equations

Solving equations

1. **5x + 13 = 18** ___

$$\begin{aligned} 5x + 13 &= 18 \\ 5x &= 5 \\ \mathbf{x} &= \mathbf{1} \end{aligned}$$

Two things were done to x: multiplied by 5, then 13 added. Undo them in the REVERSE order — whatever happened last comes off first.

The 13 went on last, so it comes off first — and off BOTH sides, or the two halves stop being equal. $18 - 13 = 5$.

That leaves 5x, which means 5 lots of x. Divide both sides by 5: $5 \div 5 = 1$.

Check by putting it back: $5(1) + 13 = 18$. It holds, so $x = 1$.

Solutions (7 of 20)

Solving Equations (continued)

Solving equations (continued)

2. **9x − 10 = 8** ___

$$9x - 10 = 8$$
$$9x = 18$$
$$x = 2$$

Two things were done to x: multiplied by 9, then 10 taken away. Undo them in the REVERSE order — whatever happened last comes off first.

The 10 went on last, so it comes off first — and off BOTH sides, or the two halves stop being equal. 8 + 10 = 18.

That leaves 9x, which means 9 lots of x. Divide both sides by 9: 18 ÷ 9 = 2.

Check by putting it back: 9(2) − 10 = 8. It holds, so x = 2.

Inequalities

Inequalities

1. **7x + 11 < 4** x ☐ **−1**

$$x < -1$$

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.

11 was added last, so it comes off first — off BOTH sides: 4 − 11 = -7.

Now divide both sides by 7: -7 ÷ 7 = −1.

Nothing was divided by a negative here, so the sign has not moved: it is still <. That is the one thing to check on every one of these before writing the answer down.

So x < −1. 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 (8 of 20)

Inequalities (continued)

Inequalities (continued)

2. $6x + 2 > -22$ x ☐ -4

$x > -4$

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: -22 – 2 = -24.

Now divide both sides by 6: -24 ÷ 6 = –4.

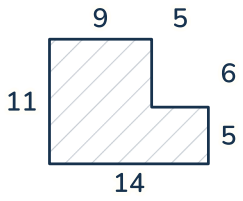
Nothing was divided by a negative here, so the sign has not moved: it is still >. That is the one thing to check on every one of these before writing the answer down.

So x > –4. 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.

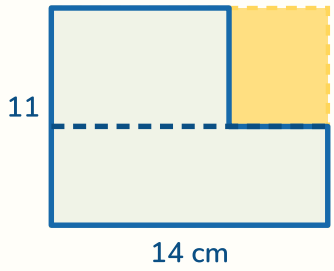
Area of Composite Shapes

Area of composite figures

1.



____ cm²



First way: pretend the bite was never taken. The whole rectangle would be 14 × 11 = 154.

Then take the bite off. It is 5 × 6 = 30, so the L is 154 – 30 = 124 square cm.

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

The bottom strip is 14 × 5 = 70, and the piece standing on it is 9 × 6 = 54.

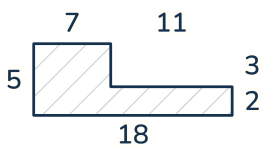
70 + 54 = 124 square cm — the same answer as the first way. Two methods that agree is how you know the answer is right.

Solutions (9 of 20)

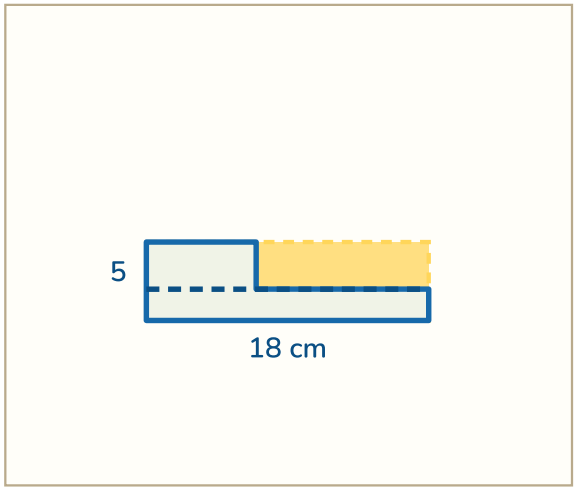
Area of Composite Shapes (continued)

Area of composite figures (continued)

2.



___ cm²



First way: pretend the bite was never taken. The whole rectangle would be 18 × 5 = 90.

Then take the bite off. It is 11 × 3 = 33, so the L is 90 − 33 = 57 square cm.

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

The bottom strip is 18 × 2 = 36, and the piece standing on it is 7 × 3 = 21.

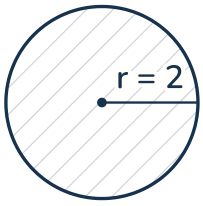
36 + 21 = 57 square cm — the same answer as the first way. Two methods that agree is how you know the answer is right.

Solutions (10 of 20)

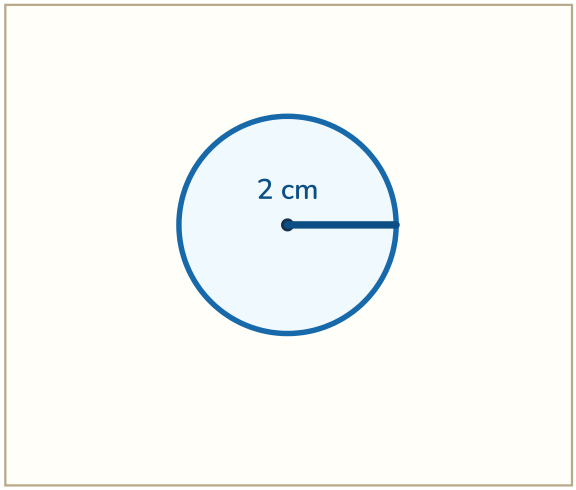
Area of a Circle

Area of a circle

1.



_____ cm²

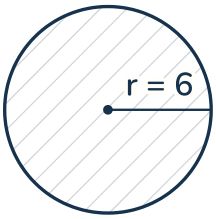


The 2 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

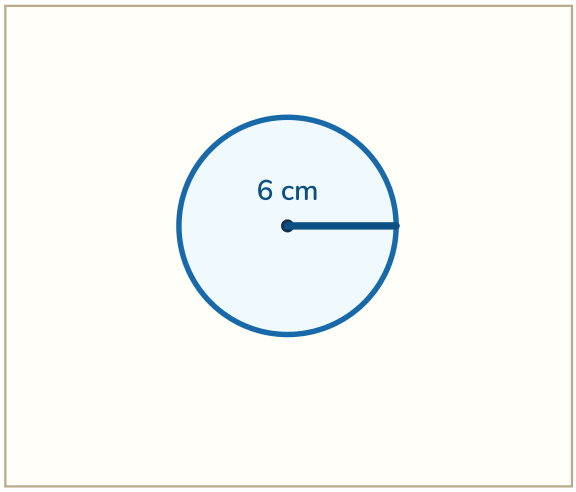
Area is π × r × r. Square the RADIUS first — only the r is squared, not the π with it: 2 × 2 = 4.

Then multiply by π: 4 × 3.14 = 12.56 square cm.

2.



_____ cm²



The 6 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: 6 × 6 = 36.

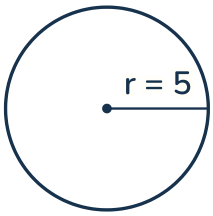
Then multiply by π: 36 × 3.14 = 113.04 square cm.

Solutions (11 of 20)

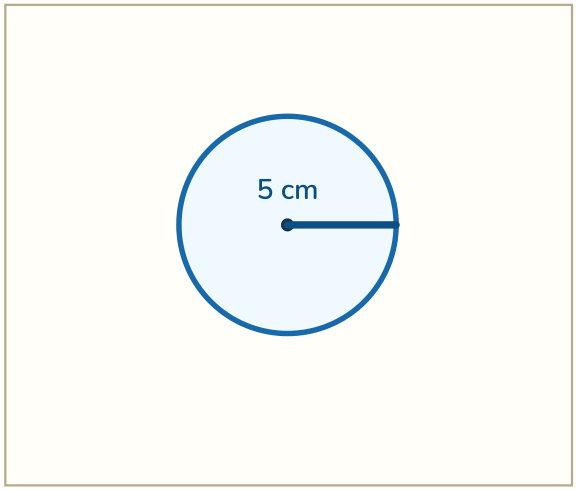
Circumference

Circumference of a circle

1.



_____ cm

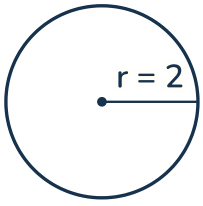


The 5 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

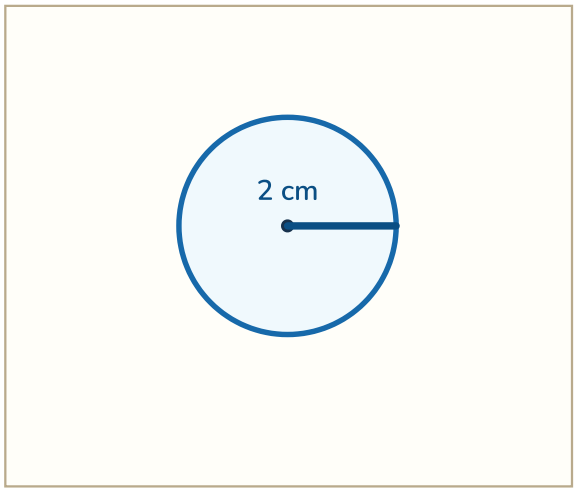
Circumference is π × the whole way across, and the whole way across is two radiuses: 2 × 5 = 10.

Then multiply by π: 10 × 3.14 = 31.4 cm. Slightly more than three times across — which is what π has always been.

2.



_____ cm



The 2 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 × 2 = 4.

Then multiply by π: 4 × 3.14 = 12.56 cm. Slightly more than three times across — which is what π has always been.

Solutions (12 of 20)

Angle Pairs

Missing angles in a pair

1.

___ degrees

$83° + x = 180°$

$180 - 83 = 97°$

$83° + 97° = 180°$

from the picture, not the numbers

lines crossing:

x = the angle opposite

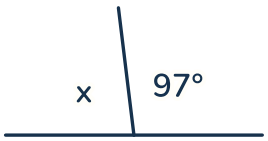
The two angles sit on a STRAIGHT LINE. A straight line is a half turn, which is 180 — not 90, and the picture is the only thing that tells you which.

So the two must add to 180: x = 180 − 83 = 97°.

If it had been the other kind you would have taken it from 90 instead and been 90° out — which is why the picture is read first.

One more shape to know: where two straight lines CROSS, the two angles facing each other are equal — nothing is taken away at all. Subtracting there would be wrong.

2.



___ degrees

$97° + x = 180°$

$180 - 97 = 83°$

$97° + 83° = 180°$

from the picture, not the numbers

lines crossing:

x = the angle opposite

The two angles sit on a STRAIGHT LINE. A straight line is a half turn, which is 180 — not 90, and the picture is the only thing that tells you which.

So the two must add to 180: x = 180 − 97 = 83°.

If it had been the other kind you would have taken it from 90 instead and been 90° out — which is why the picture is read first.

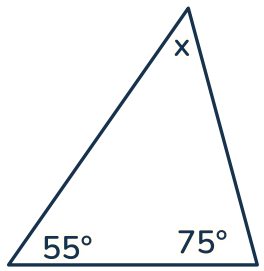
One more shape to know: where two straight lines CROSS, the two angles facing each other are equal — nothing is taken away at all. Subtracting there would be wrong.

Solutions (13 of 20)

Angles in a Triangle

The third angle of a triangle

1.



___ degrees

$$55 + 75 = 130$$

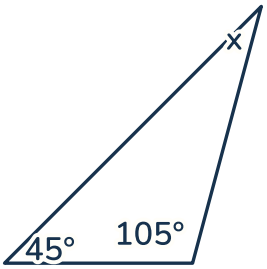
$$180 - 130 = \mathbf{50°}$$

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: 55 and 75, which is 130 between them.

So the third takes up what is left of the 180: 180 – 130 = 50°.

2.



___ degrees

$$45 + 105 = 150$$

$$180 - 150 = \mathbf{30°}$$

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: 45 and 105, which is 150 between them.

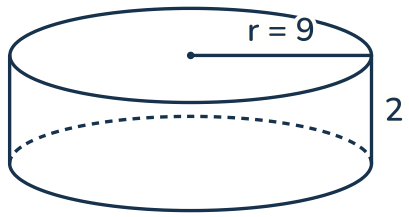
So the third takes up what is left of the 180: 180 – 150 = 30°.

Solutions (14 of 20)

Volume of Cylinders

Volume of a cylinder

1.



base: 254.34

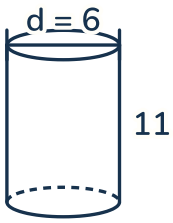
254.34 × 2 = **508.68**

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 × 9 × 9 = 254.34 square cm.

Times the height: 254.34 × 2 = 508.68 cubic cm.

2.



base: 28.26

28.26 × 11 = **310.86**

The 6 cm goes right across, so it is the diameter. Halve it first: the radius is 3. 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 × 3 × 3 = 28.26 square cm.

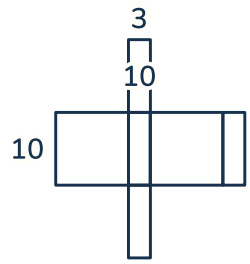
Times the height: 28.26 × 11 = 310.86 cubic cm.

Solutions (15 of 20)

Surface Area

Surface area of a box

1.



____ cm²

front and back:	2 × 3 × 10 =	60
the two sides:	2 × 10 × 10 =	200
top and bottom:	2 × 3 × 10 =	60
total:		**320**

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.

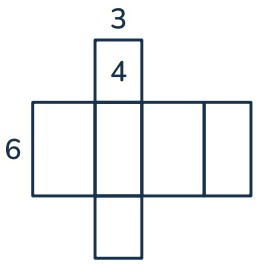
Front and back are 3 by 10, and they are identical — so that pair is 2 × 3 × 10 = 60.

The two sides are 10 by 10, and they are identical — so that pair is 2 × 10 × 10 = 200.

Top and bottom are 3 by 10, and they are identical — so that pair is 2 × 3 × 10 = 60.

Three pairs, six faces, none missed: 60 + 200 + 60 = 320 square cm.

2.



____ cm²

front and back:	2 × 3 × 6 =	36
the two sides:	2 × 4 × 6 =	48
top and bottom:	2 × 3 × 4 =	24
total:		**108**

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 6, and they are identical — so that pair is 2 × 3 × 6 = 36.

The two sides are 4 by 6, and they are identical — so that pair is 2 × 4 × 6 = 48.

Top and bottom are 3 by 4, and they are identical — so that pair is 2 × 3 × 4 = 24.

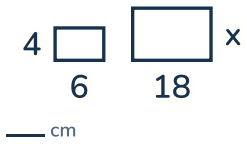
Three pairs, six faces, none missed: 36 + 48 + 24 = 108 square cm.

Solutions (16 of 20)

Similar Figures

Similar figures and scale

1.



12 cm

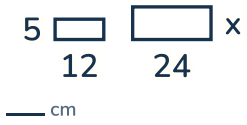
Two shapes, the same shape at two sizes. Every side of the big one is the matching side of the small one multiplied by the SAME number — so the first job is to pair the sides up: long with long, short with short.

Use the pair you can see both of. 6 became 18, and 18 ÷ 6 = 3 — so every side is 3 times bigger.

Now the missing side is on the BIG shape, so it grows: 4 × 3 = 12.

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

2.



10 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. 12 became 24, and 24 ÷ 12 = 2 — so every side is 2 times bigger.

Now the missing side is on the BIG shape, so it grows: 5 × 2 = 10.

Check it against the picture: the answer should be bigger than 5, and 10 is. So the missing side is 10 cm.

Solutions (17 of 20)

Probability

Probability of one event

1. **3 red, 9 blue** P(red) ____

$$3 + 9 = 12$$

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

Count EVERYTHING first, before the ones being asked about: 3 + 9 = 12 altogether. That is the bottom of the fraction, and it is the half that gets swapped for the wrong number.

Now the ones that count as a win: 3 red.

Chance is the wins OVER the total — not over the rest. So it is 3 out of 12.

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

2. **7 red, 3 blue, 2 green** P(blue) ____

$$7 + 3 + 2 = 12$$

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

Count EVERYTHING first, before the ones being asked about: 7 + 3 + 2 = 12 altogether. That is the bottom of the fraction, and it is the half that gets swapped for the wrong number.

Now the ones that count as a win: 3 blue.

Chance is the wins OVER the total — not over the rest. So it is 3 out of 12.

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

Mean, Median and Mode

Mean, median, mode and range

1. Mean
   25, 25, 9, 8, 3

___

25 25 9 8 3

25 + 25 + 9 + 8 + 3 = 70

70 ÷ 5 = **14**

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

25 + 25 + 9 + 8 + 3 = 70.

Now share it between all 5 of them: 70 ÷ 5 = 14.

Solutions (18 of 20)

Mean, Median and Mode (continued)

Mean, median, mode and range (continued)

2. **Range**
   15, 26, 5, 2, 2

—

15	**26**	5	**2**	2
26	–	2	=	**24**

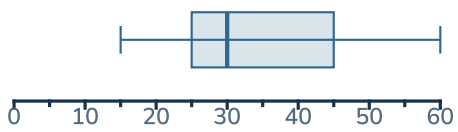
The range is not an average at all — it is how far it is from the smallest to the biggest.

The smallest is 2 and the biggest is 26, so take one from the other: 26 – 2 = 24.

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.

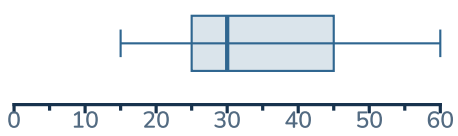
So the answer is 60 cm. Nothing is added or averaged — a box plot is read, not calculated.

Solutions (19 of 20)

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 (20 of 20)

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.