

Grade 6 Integers and Fractions Workbook

5 lessons · printable · answer key at the back



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Positive and Negative Numbers

WORKED EXAMPLE

$$-11 + 1 = \underline{-10}$$

1. Add and subtract integers

Add or subtract the integers.

1 $-1 + 1 = \underline{\quad}$

4 $-2 + 10 = \underline{\quad}$

7 $-13 + 9 = \underline{\quad}$

10 $-15 + 6 = \underline{\quad}$

13 $-16 + 1 = \underline{\quad}$

16 $-7 + 7 = \underline{\quad}$

19 $-3 + 3 = \underline{\quad}$

22 $8 - 17 = \underline{\quad}$

25 $-7 + 4 = \underline{\quad}$

28 $-11 + 9 = \underline{\quad}$

31 $-20 + 3 = \underline{\quad}$

34 $-9 + 5 = \underline{\quad}$

37 $-2 + 5 = \underline{\quad}$

40 $-18 + 13 = \underline{\quad}$

43 $-11 + 4 = \underline{\quad}$

46 $-16 + 9 = \underline{\quad}$

49 $1 - 5 = \underline{\quad}$

2 $-13 + 7 = \underline{\quad}$

5 $-19 + 2 = \underline{\quad}$

8 $-19 + 10 = \underline{\quad}$

11 $-16 + 11 = \underline{\quad}$

14 $-13 + 16 = \underline{\quad}$

17 $-8 + 15 = \underline{\quad}$

20 $-18 + 11 = \underline{\quad}$

23 $-6 + 2 = \underline{\quad}$

26 $-8 + 7 = \underline{\quad}$

29 $-1 + 3 = \underline{\quad}$

32 $9 - 16 = \underline{\quad}$

35 $3 - 10 = \underline{\quad}$

38 $-17 + 17 = \underline{\quad}$

41 $-9 + 8 = \underline{\quad}$

44 $-18 + 6 = \underline{\quad}$

47 $-12 + 8 = \underline{\quad}$

50 $-8 + 9 = \underline{\quad}$

3 $-19 + 14 = \underline{\quad}$

6 $-2 + 13 = \underline{\quad}$

9 $7 - 13 = \underline{\quad}$

12 $1 - 2 = \underline{\quad}$

15 $-20 + 10 = \underline{\quad}$

18 $-1 + 9 = \underline{\quad}$

21 $-2 + 7 = \underline{\quad}$

24 $2 - 7 = \underline{\quad}$

27 $-8 + 14 = \underline{\quad}$

30 $-7 + 16 = \underline{\quad}$

33 $-4 + 10 = \underline{\quad}$

36 $-12 + 9 = \underline{\quad}$

39 $3 - 4 = \underline{\quad}$

42 $4 - 13 = \underline{\quad}$

45 $6 - 12 = \underline{\quad}$

48 $-6 + 14 = \underline{\quad}$

Multiplying Integers

WORKED EXAMPLE

$$5 \times (-11) = \underline{-55}$$

2. Multiplying integers

Multiply. Remember what two negative signs make.

1 $-11 \times 7 = \underline{\hspace{2cm}}$

4 $-6 \times 4 = \underline{\hspace{2cm}}$

7 $-6 \times 10 = \underline{\hspace{2cm}}$

10 $3 \times (-3) = \underline{\hspace{2cm}}$

13 $-8 \times 11 = \underline{\hspace{2cm}}$

16 $-7 \times (-12) = \underline{\hspace{2cm}}$

19 $3 \times (-9) = \underline{\hspace{2cm}}$

22 $6 \times (-9) = \underline{\hspace{2cm}}$

25 $-2 \times (-10) = \underline{\hspace{2cm}}$

28 $-4 \times 5 = \underline{\hspace{2cm}}$

31 $-6 \times 9 = \underline{\hspace{2cm}}$

34 $4 \times (-5) = \underline{\hspace{2cm}}$

37 $10 \times (-11) = \underline{\hspace{2cm}}$

40 $-8 \times 8 = \underline{\hspace{2cm}}$

2 $-4 \times (-3) = \underline{\hspace{2cm}}$

5 $-10 \times (-3) = \underline{\hspace{2cm}}$

8 $4 \times (-10) = \underline{\hspace{2cm}}$

11 $-3 \times (-12) = \underline{\hspace{2cm}}$

14 $-7 \times 6 = \underline{\hspace{2cm}}$

17 $-6 \times 8 = \underline{\hspace{2cm}}$

20 $-2 \times 10 = \underline{\hspace{2cm}}$

23 $12 \times (-10) = \underline{\hspace{2cm}}$

26 $-5 \times 6 = \underline{\hspace{2cm}}$

29 $-4 \times (-6) = \underline{\hspace{2cm}}$

32 $3 \times (-10) = \underline{\hspace{2cm}}$

35 $-12 \times (-12) = \underline{\hspace{2cm}}$

38 $7 \times (-2) = \underline{\hspace{2cm}}$

3 $4 \times (-7) = \underline{\hspace{2cm}}$

6 $-12 \times 4 = \underline{\hspace{2cm}}$

9 $11 \times (-3) = \underline{\hspace{2cm}}$

12 $-5 \times 2 = \underline{\hspace{2cm}}$

15 $-4 \times 4 = \underline{\hspace{2cm}}$

18 $-10 \times 5 = \underline{\hspace{2cm}}$

21 $-6 \times (-11) = \underline{\hspace{2cm}}$

24 $3 \times (-6) = \underline{\hspace{2cm}}$

27 $10 \times (-7) = \underline{\hspace{2cm}}$

30 $4 \times (-9) = \underline{\hspace{2cm}}$

33 $-4 \times (-2) = \underline{\hspace{2cm}}$

36 $-7 \times 3 = \underline{\hspace{2cm}}$

39 $-11 \times (-12) = \underline{\hspace{2cm}}$

Order of Operations

WORKED EXAMPLE

$$5 - 10 \div 2 = \underline{0}$$

3. Order of operations

Follow the order of operations to solve each problem.

1 $10 \div 5 + 9 = \underline{\hspace{2cm}}$

4 $2 + 7 \times 11 = \underline{\hspace{2cm}}$

7 $48 \div 6 + 2 = \underline{\hspace{2cm}}$

10 $5 - 27 \div 9 = \underline{\hspace{2cm}}$

13 $5 \times 4 + 8 = \underline{\hspace{2cm}}$

16 $2 \times 9 + 2 = \underline{\hspace{2cm}}$

19 $54 \div 6 + 8 = \underline{\hspace{2cm}}$

22 $5 + 72 \div 9 = \underline{\hspace{2cm}}$

25 $3 \times 4 + 4 = \underline{\hspace{2cm}}$

28 $3 + 3 \times 2 = \underline{\hspace{2cm}}$

31 $3 + 42 \div 6 = \underline{\hspace{2cm}}$

34 $9 - 16 \div 8 = \underline{\hspace{2cm}}$

37 $16 \div 8 + 2 = \underline{\hspace{2cm}}$

2 $21 \div 3 + 7 = \underline{\hspace{2cm}}$

5 $7 - 27 \div 9 = \underline{\hspace{2cm}}$

8 $9 + 10 \times 6 = \underline{\hspace{2cm}}$

11 $7 + 10 \times 3 = \underline{\hspace{2cm}}$

14 $3 + 9 \times 6 = \underline{\hspace{2cm}}$

17 $35 \div 7 + 5 = \underline{\hspace{2cm}}$

20 $3 + 15 \div 5 = \underline{\hspace{2cm}}$

23 $2 - 12 \div 6 = \underline{\hspace{2cm}}$

26 $9 - 16 \div 2 = \underline{\hspace{2cm}}$

29 $9 + 20 \div 2 = \underline{\hspace{2cm}}$

32 $28 \div 4 + 7 = \underline{\hspace{2cm}}$

35 $9 + 25 \div 5 = \underline{\hspace{2cm}}$

38 $12 \times 10 + 5 = \underline{\hspace{2cm}}$

3 $36 \div 9 + 6 = \underline{\hspace{2cm}}$

6 $3 + 2 \times 10 = \underline{\hspace{2cm}}$

9 $5 \times 3 + 9 = \underline{\hspace{2cm}}$

12 $45 \div 5 + 2 = \underline{\hspace{2cm}}$

15 $8 - 12 \div 2 = \underline{\hspace{2cm}}$

18 $7 + 10 \times 5 = \underline{\hspace{2cm}}$

21 $9 + 12 \times 9 = \underline{\hspace{2cm}}$

24 $12 \times 3 + 6 = \underline{\hspace{2cm}}$

27 $11 \times 8 + 7 = \underline{\hspace{2cm}}$

30 $6 + 10 \times 6 = \underline{\hspace{2cm}}$

33 $7 \times 12 + 3 = \underline{\hspace{2cm}}$

36 $2 + 11 \times 5 = \underline{\hspace{2cm}}$

Dividing Fractions

WORKED EXAMPLE

$$\frac{7}{8} \div \frac{6}{8} = \frac{7}{6}$$

4. Dividing fractions

Divide. Write each answer in simplest form.

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

4 $\frac{1}{6} \div \frac{1}{5} = \text{—}$

7 $\frac{3}{4} \div \frac{2}{6} = \text{—}$

10 $\frac{3}{7} \div \frac{4}{5} = \text{—}$

13 $\frac{1}{7} \div \frac{2}{7} = \text{—}$

16 $\frac{1}{8} \div \frac{3}{5} = \text{—}$

19 $\frac{1}{7} \div \frac{1}{8} = \text{—}$

22 $\frac{6}{7} \div \frac{4}{6} = \text{—}$

25 $\frac{1}{4} \div \frac{2}{4} = \text{—}$

28 $\frac{3}{4} \div \frac{7}{8} = \text{—}$

31 $\frac{1}{6} \div \frac{4}{8} = \text{—}$

34 $\frac{5}{7} \div \frac{1}{3} = \text{—}$

37 $\frac{1}{4} \div \frac{2}{6} = \text{—}$

40 $\frac{2}{5} \div \frac{3}{8} = \text{—}$

43 $\frac{2}{6} \div \frac{3}{4} = \text{—}$

2 $\frac{2}{4} \div \frac{1}{3} = \text{—}$

5 $\frac{4}{8} \div \frac{7}{8} = \text{—}$

8 $\frac{7}{8} \div \frac{2}{5} = \text{—}$

11 $\frac{3}{5} \div \frac{1}{4} = \text{—}$

14 $\frac{3}{8} \div \frac{1}{6} = \text{—}$

17 $\frac{5}{7} \div \frac{1}{7} = \text{—}$

20 $\frac{4}{8} \div \frac{2}{8} = \text{—}$

23 $\frac{4}{5} \div \frac{1}{3} = \text{—}$

26 $\frac{1}{2} \div \frac{4}{7} = \text{—}$

29 $\frac{3}{5} \div \frac{2}{7} = \text{—}$

32 $\frac{2}{4} \div \frac{1}{5} = \text{—}$

35 $\frac{3}{6} \div \frac{1}{5} = \text{—}$

38 $\frac{2}{3} \div \frac{3}{6} = \text{—}$

41 $\frac{3}{6} \div \frac{2}{8} = \text{—}$

3 $\frac{3}{5} \div \frac{6}{7} = \text{—}$

6 $\frac{6}{8} \div \frac{1}{7} = \text{—}$

9 $\frac{5}{7} \div \frac{5}{6} = \text{—}$

12 $\frac{3}{7} \div \frac{7}{8} = \text{—}$

15 $\frac{1}{6} \div \frac{5}{8} = \text{—}$

18 $\frac{1}{4} \div \frac{5}{7} = \text{—}$

21 $\frac{1}{8} \div \frac{2}{8} = \text{—}$

24 $\frac{5}{6} \div \frac{2}{8} = \text{—}$

27 $\frac{1}{8} \div \frac{1}{6} = \text{—}$

30 $\frac{2}{4} \div \frac{3}{7} = \text{—}$

33 $\frac{2}{3} \div \frac{4}{8} = \text{—}$

36 $\frac{5}{6} \div \frac{3}{7} = \text{—}$

39 $\frac{7}{8} \div \frac{1}{5} = \text{—}$

42 $\frac{1}{3} \div \frac{3}{7} = \text{—}$

Dividing Decimals

WORKED EXAMPLE

$$18.6 \div 3 = \underline{6.2}$$

5. Multiply and divide decimals

Divide. Each quotient is an exact decimal.

- | | | |
|-----------------------------|-----------------------------|----------------------------|
| 1 $6.54 \div 3 =$ _____ | 2 $72.0 \div 12 =$ _____ | 3 $102.60 \div 9 =$ _____ |
| 4 $57.5 \div 5 =$ _____ | 5 $48.40 \div 5 =$ _____ | 6 $44.4 \div 4 =$ _____ |
| 7 $48.42 \div 6 =$ _____ | 8 $23.1 \div 7 =$ _____ | 9 $127.20 \div 12 =$ _____ |
| 10 $42.5 \div 5 =$ _____ | 11 $65.76 \div 6 =$ _____ | 12 $21.76 \div 2 =$ _____ |
| 13 $50.5 \div 5 =$ _____ | 14 $67.00 \div 10 =$ _____ | 15 $11.4 \div 6 =$ _____ |
| 16 $74.96 \div 8 =$ _____ | 17 $17.80 \div 5 =$ _____ | 18 $72.24 \div 8 =$ _____ |
| 19 $82.6 \div 7 =$ _____ | 20 $18.74 \div 2 =$ _____ | 21 $24.45 \div 3 =$ _____ |
| 22 $30.0 \div 4 =$ _____ | 23 $129.58 \div 11 =$ _____ | 24 $45.09 \div 9 =$ _____ |
| 25 $49.5 \div 11 =$ _____ | 26 $40.4 \div 4 =$ _____ | 27 $17.58 \div 3 =$ _____ |
| 28 $81.30 \div 10 =$ _____ | 29 $19.68 \div 12 =$ _____ | 30 $35.63 \div 7 =$ _____ |
| 31 $141.24 \div 12 =$ _____ | 32 $48.5 \div 5 =$ _____ | 33 $54.09 \div 9 =$ _____ |
| 34 $97.20 \div 12 =$ _____ | 35 $2.8 \div 7 =$ _____ | 36 $103.4 \div 11 =$ _____ |
| 37 $37.55 \div 5 =$ _____ | 38 $77.20 \div 10 =$ _____ | 39 $11.52 \div 12 =$ _____ |
| 40 $71.16 \div 12 =$ _____ | 41 $40.53 \div 7 =$ _____ | 42 $14.04 \div 12 =$ _____ |
| 43 $32.20 \div 4 =$ _____ | 44 $58.5 \div 9 =$ _____ | 45 $23.84 \div 2 =$ _____ |
| 46 $15.8 \div 2 =$ _____ | 47 $21.96 \div 2 =$ _____ | 48 $38.94 \div 6 =$ _____ |
| 49 $33.0 \div 3 =$ _____ | 50 $70.88 \div 8 =$ _____ | |

Answer Key (1 of 3)

Positive and Negative Numbers

Add and subtract integers

1. $-1 + 1 = 0$
2. $-13 + 7 = -6$
3. $-19 + 14 = -5$
4. $-2 + 10 = 8$
5. $-19 + 2 = -17$
6. $-2 + 13 = 11$
7. $-13 + 9 = -4$
8. $-19 + 10 = -9$
9. $7 - 13 = -6$
10. $-15 + 6 = -9$
11. $-16 + 11 = -5$
12. $1 - 2 = -1$
13. $-16 + 1 = -15$
14. $-13 + 16 = 3$
15. $-20 + 10 = -10$
16. $-7 + 7 = 0$
17. $-8 + 15 = 7$
18. $-1 + 9 = 8$
19. $-3 + 3 = 0$
20. $-18 + 11 = -7$
21. $-2 + 7 = 5$
22. $8 - 17 = -9$
23. $-6 + 2 = -4$
24. $2 - 7 = -5$
25. $-7 + 4 = -3$
26. $-8 + 7 = -1$
27. $-8 + 14 = 6$
28. $-11 + 9 = -2$
29. $-1 + 3 = 2$
30. $-7 + 16 = 9$
31. $-20 + 3 = -17$
32. $9 - 16 = -7$
33. $-4 + 10 = 6$
34. $-9 + 5 = -4$
35. $3 - 10 = -7$
36. $-12 + 9 = -3$
37. $-2 + 5 = 3$
38. $-17 + 17 = 0$
39. $3 - 4 = -1$
40. $-18 + 13 = -5$
41. $-9 + 8 = -1$
42. $4 - 13 = -9$
43. $-11 + 4 = -7$
44. $-18 + 6 = -12$
45. $6 - 12 = -6$

Positive and Negative Numbers (continued)

Add and subtract integers (continued)

46. $-16 + 9 = -7$
47. $-12 + 8 = -4$
48. $-6 + 14 = 8$
49. $1 - 5 = -4$
50. $-8 + 9 = 1$

Multiplying Integers

Multiplying integers

1. $-11 \times 7 = -77$
2. $-4 \times -3 = 12$
3. $4 \times -7 = -28$
4. $-6 \times 4 = -24$
5. $-10 \times -3 = 30$
6. $-12 \times 4 = -48$
7. $-6 \times 10 = -60$
8. $4 \times -10 = -40$
9. $11 \times -3 = -33$
10. $3 \times -3 = -9$
11. $-3 \times -12 = 36$
12. $-5 \times 2 = -10$
13. $-8 \times 11 = -88$
14. $-7 \times 6 = -42$
15. $-4 \times 4 = -16$
16. $-7 \times -12 = 84$
17. $-6 \times 8 = -48$
18. $-10 \times 5 = -50$
19. $3 \times -9 = -27$
20. $-2 \times 10 = -20$
21. $-6 \times -11 = 66$
22. $6 \times -9 = -54$
23. $12 \times -10 = -120$
24. $3 \times -6 = -18$
25. $-2 \times -10 = 20$
26. $-5 \times 6 = -30$
27. $10 \times -7 = -70$
28. $-4 \times 5 = -20$
29. $-4 \times -6 = 24$
30. $4 \times -9 = -36$
31. $-6 \times 9 = -54$
32. $3 \times -10 = -30$
33. $-4 \times -2 = 8$
34. $4 \times -5 = -20$
35. $-12 \times -12 = 144$
36. $-7 \times 3 = -21$
37. $10 \times -11 = -110$

Answer Key (2 of 3)

Multiplying Integers (continued)

Multiplying integers (continued)

38. $7 \times -2 = -14$
39. $-11 \times -12 = 132$
40. $-8 \times 8 = -64$

Order of Operations

Order of operations

1. $10 \div 5 + 9 = 11$
2. $21 \div 3 + 7 = 14$
3. $36 \div 9 + 6 = 10$
4. $2 + 7 \times 11 = 79$
5. $7 - 27 \div 9 = 4$
6. $3 + 2 \times 10 = 23$
7. $48 \div 6 + 2 = 10$
8. $9 + 10 \times 6 = 69$
9. $5 \times 3 + 9 = 24$
10. $5 - 27 \div 9 = 2$
11. $7 + 10 \times 3 = 37$
12. $45 \div 5 + 2 = 11$
13. $5 \times 4 + 8 = 28$
14. $3 + 9 \times 6 = 57$
15. $8 - 12 \div 2 = 2$
16. $2 \times 9 + 2 = 20$
17. $35 \div 7 + 5 = 10$
18. $7 + 10 \times 5 = 57$
19. $54 \div 6 + 8 = 17$
20. $3 + 15 \div 5 = 6$
21. $9 + 12 \times 9 = 117$
22. $5 + 72 \div 9 = 13$
23. $2 - 12 \div 6 = 0$
24. $12 \times 3 + 6 = 42$
25. $3 \times 4 + 4 = 16$
26. $9 - 16 \div 2 = 1$
27. $11 \times 8 + 7 = 95$
28. $3 + 3 \times 2 = 9$
29. $9 + 20 \div 2 = 19$
30. $6 + 10 \times 6 = 66$
31. $3 + 42 \div 6 = 10$
32. $28 \div 4 + 7 = 14$
33. $7 \times 12 + 3 = 87$
34. $9 - 16 \div 8 = 7$
35. $9 + 25 \div 5 = 14$
36. $2 + 11 \times 5 = 57$
37. $16 \div 8 + 2 = 4$
38. $12 \times 10 + 5 = 125$

Dividing Fractions

Dividing fractions

1. $5/6 \div 2/6 = 5/2$
2. $2/4 \div 1/3 = 3/2$
3. $3/5 \div 6/7 = 7/10$
4. $1/6 \div 1/5 = 5/6$
5. $4/8 \div 7/8 = 4/7$
6. $6/8 \div 1/7 = 21/4$
7. $3/4 \div 2/6 = 9/4$
8. $7/8 \div 2/5 = 35/16$
9. $5/7 \div 5/6 = 6/7$
10. $3/7 \div 4/5 = 15/28$
11. $3/5 \div 1/4 = 12/5$
12. $3/7 \div 7/8 = 24/49$
13. $1/7 \div 2/7 = 1/2$
14. $3/8 \div 1/6 = 9/4$
15. $1/6 \div 5/8 = 4/15$
16. $1/8 \div 3/5 = 5/24$
17. $5/7 \div 1/7 = 5$
18. $1/4 \div 5/7 = 7/20$
19. $1/7 \div 1/8 = 8/7$
20. $4/8 \div 2/8 = 2$
21. $1/8 \div 2/8 = 1/2$
22. $6/7 \div 4/6 = 9/7$
23. $4/5 \div 1/3 = 12/5$
24. $5/6 \div 2/8 = 10/3$
25. $1/4 \div 2/4 = 1/2$
26. $1/2 \div 4/7 = 7/8$
27. $1/8 \div 1/6 = 3/4$
28. $3/4 \div 7/8 = 6/7$
29. $3/5 \div 2/7 = 21/10$
30. $2/4 \div 3/7 = 7/6$
31. $1/6 \div 4/8 = 1/3$
32. $2/4 \div 1/5 = 5/2$
33. $2/3 \div 4/8 = 4/3$
34. $5/7 \div 1/3 = 15/7$
35. $3/6 \div 1/5 = 5/2$
36. $5/6 \div 3/7 = 35/18$
37. $1/4 \div 2/6 = 3/4$
38. $2/3 \div 3/6 = 4/3$
39. $7/8 \div 1/5 = 35/8$
40. $2/5 \div 3/8 = 16/15$
41. $3/6 \div 2/8 = 2$
42. $1/3 \div 3/7 = 7/9$
43. $2/6 \div 3/4 = 4/9$

Answer Key (3 of 3)

Dividing Decimals

Multiply and divide decimals

1. $6.54 \div 3 = 2.18$
2. $72.0 \div 12 = 6.0$
3. $102.60 \div 9 = 11.40$
4. $57.5 \div 5 = 11.5$
5. $48.40 \div 5 = 9.68$
6. $44.4 \div 4 = 11.1$
7. $48.42 \div 6 = 8.07$
8. $23.1 \div 7 = 3.3$
9. $127.20 \div 12 = 10.60$
10. $42.5 \div 5 = 8.5$
11. $65.76 \div 6 = 10.96$
12. $21.76 \div 2 = 10.88$
13. $50.5 \div 5 = 10.1$
14. $67.00 \div 10 = 6.70$
15. $11.4 \div 6 = 1.9$
16. $74.96 \div 8 = 9.37$
17. $17.80 \div 5 = 3.56$
18. $72.24 \div 8 = 9.03$
19. $82.6 \div 7 = 11.8$
20. $18.74 \div 2 = 9.37$
21. $24.45 \div 3 = 8.15$
22. $30.0 \div 4 = 7.5$
23. $129.58 \div 11 = 11.78$
24. $45.09 \div 9 = 5.01$
25. $49.5 \div 11 = 4.5$
26. $40.4 \div 4 = 10.1$
27. $17.58 \div 3 = 5.86$
28. $81.30 \div 10 = 8.13$
29. $19.68 \div 12 = 1.64$
30. $35.63 \div 7 = 5.09$
31. $141.24 \div 12 = 11.77$
32. $48.5 \div 5 = 9.7$
33. $54.09 \div 9 = 6.01$
34. $97.20 \div 12 = 8.10$
35. $2.8 \div 7 = 0.4$
36. $103.4 \div 11 = 9.4$
37. $37.55 \div 5 = 7.51$
38. $77.20 \div 10 = 7.72$
39. $11.52 \div 12 = 0.96$
40. $71.16 \div 12 = 5.93$
41. $40.53 \div 7 = 5.79$
42. $14.04 \div 12 = 1.17$
43. $32.20 \div 4 = 8.05$

Dividing Decimals (continued)

Multiply and divide decimals (continued)

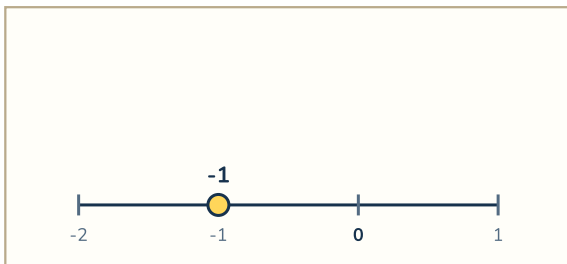
44. $58.5 \div 9 = 6.5$
45. $23.84 \div 2 = 11.92$
46. $15.8 \div 2 = 7.9$
47. $21.96 \div 2 = 10.98$
48. $38.94 \div 6 = 6.49$
49. $33.0 \div 3 = 11.0$
50. $70.88 \div 8 = 8.86$

Solutions (1 of 4)

Positive and Negative Numbers

Add and subtract integers

1. $-1 + 1 = \underline{\hspace{1cm}}$

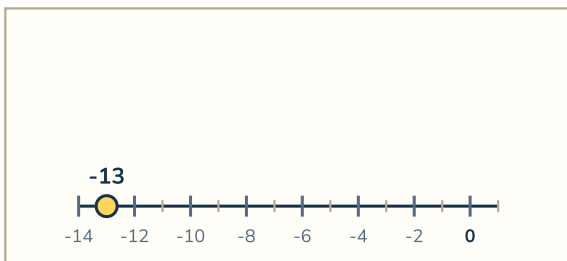


Put a counter on -1. Everything else is which way it slides and how far.

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

So slide 1 to the right, from -1 to 0. $(-1) + 1 = 0$.

2. $-13 + 7 = \underline{\hspace{1cm}}$



Put a counter on -13. Everything else is which way it slides and how far.

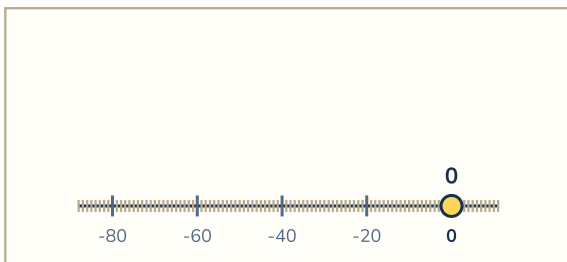
Adding a positive moves right, the way it always has.

So slide 7 to the right, from -13 to -6. $(-13) + 7 = -6$.

Multiplying Integers

Multiplying integers

1. $-11 \times 7 = \underline{\hspace{1cm}}$



$(-11) \times 7$ is 7 lots of -11. Start at 0 and take them one at a time — the size is ordinary times-tables, so what is left to settle is which way it goes.

One lot of -11 goes LEFT, landing on -11.

All 7 hops go the same way — not one of them turns round — so it can only get further from 0, never back towards it. That is the whole of why the answer is below zero.

7 hops of 11 is 77 of distance, all of it on the low side. So $(-11) \times 7 = -77$.

Solutions (2 of 4)

Multiplying Integers (continued)

Multiplying integers (continued)

2. $-4 \times (-3) = \underline{\hspace{1cm}}$

$$(-4) \times (-3) = ?$$

$$4 \times 3 = 12$$

signs: $(-4) \quad (-3) \rightarrow$

plus

$$(-4) \times (-3) = 12$$

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: $4 \times 3 = 12$. Ordinary times-tables — the negatives play no part in the size.

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

Size 12, sign plus — so $(-4) \times (-3) = 12$.

Order of Operations

Order of operations

1. $10 \div 5 + 9 = \underline{\hspace{1cm}}$

$$\begin{array}{ccccc} 10 & \div & 5 & + & 9 \\ & 2 & + & & \\ & & 11 & & \end{array}$$

$\times$ and $\div$ come before $+$ and $-$, so this goes first. $10 \div 5 = 2$.

Only $+$ and $-$ are left, so work from left to right. $2 + 9 = 11$.

Nothing is left to work out, so the answer is 11.

2. $21 \div 3 + 7 = \underline{\hspace{1cm}}$

$$\begin{array}{ccccc} 21 & \div & 3 & + & 7 \\ & 7 & + & & \\ & & 14 & & \end{array}$$

$\times$ and $\div$ come before $+$ and $-$, so this goes first. $21 \div 3 = 7$.

Only $+$ and $-$ are left, so work from left to right. $7 + 7 = 14$.

Nothing is left to work out, so the answer is 14.

Solutions (3 of 4)

Dividing Fractions

Dividing fractions

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



each piece is $\frac{2}{6}$

$$\frac{2}{6} \rightarrow \frac{6}{2}$$
$$\frac{5}{6} \div \frac{2}{6} = \frac{5}{2}$$
$$\frac{5}{6} \times \frac{6}{2} = \frac{5}{2}$$
$$\frac{30}{12} = \frac{5}{2}$$

$\frac{5}{6} \div \frac{2}{6}$ is asking a question: how many $\frac{2}{6}$ s fit inside $\frac{5}{6}$?

Lay $\frac{2}{6}$ against it and see how many times it goes.

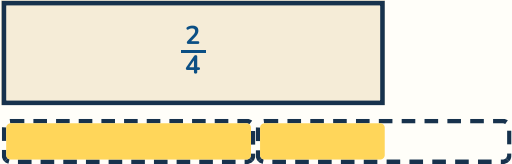
2 whole pieces and $\frac{1}{2}$ of another fits — so $\frac{5}{6} \div \frac{2}{6} = \frac{5}{2}$.

Now try multiplying by $\frac{6}{2}$ — $\frac{2}{6}$ turned over. It lands on the same number.

That is all turning it over does — the two questions are the same question, so either way of writing it will do. $\frac{5}{6} \div \frac{2}{6} = \frac{5}{2}$.

Worked out in full: 5×6 over 6×2 is $\frac{30}{12}$, which simplifies to $\frac{5}{2}$.

2. $\frac{2}{4} \div \frac{1}{3} = \text{—}$



each piece is $\frac{1}{3}$

$$\frac{1}{3} \rightarrow \frac{3}{1}$$
$$\frac{2}{4} \div \frac{1}{3} = \frac{3}{2}$$
$$\frac{2}{4} \times \frac{3}{1} = \frac{3}{2}$$
$$\frac{6}{4} = \frac{3}{2}$$

$\frac{2}{4} \div \frac{1}{3}$ is asking a question: how many $\frac{1}{3}$ s fit inside $\frac{2}{4}$?

Lay $\frac{1}{3}$ against it and see how many times it goes.

1 whole piece and $\frac{1}{2}$ of another fits — so $\frac{2}{4} \div \frac{1}{3} = \frac{3}{2}$.

Now try multiplying by $\frac{3}{1}$ — $\frac{1}{3}$ turned over. It lands on the same number.

That is all turning it over does — the two questions are the same question, so either way of writing it will do. $\frac{2}{4} \div \frac{1}{3} = \frac{3}{2}$.

Worked out in full: 2×3 over 4×1 is $\frac{6}{4}$, which simplifies to $\frac{3}{2}$.

Solutions (4 of 4)

Dividing Decimals

Multiply and divide decimals

1. $6.54 \div 3 = \underline{\hspace{2cm}}$

$$\begin{array}{rcl} 6.54 & \div & 3 \\ 6.54 & \div & 3 = 2.18 \\ 2.18 & \times & 3 = 6.54 \end{array}$$

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: $6.54 \div 3 = 2.18$.

Check it the other way round: 2.18×3 should give 6.54 back. A point in the wrong place fails this instantly — 6.54 and a tenth of it are not close.

2. $72.0 \div 12 = \underline{\hspace{2cm}}$

$$\begin{array}{rcl} 72.0 & \div & 12 \\ 72.0 & \div & 12 = 6.0 \\ 6.0 & \times & 12 = 72.0 \end{array}$$

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: $72.0 \div 12 = 6.0$.

Check it the other way round: 6.0×12 should give 72.0 back. A point in the wrong place fails this instantly — 72.0 and a tenth of it are not close.