7th grade math worksheets

9 sheets, one of each skill, with the answer keys together from page 11.

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Adding integers

Same signs: add the sizes and keep the sign. Different signs: subtract the sizes, take the larger one's sign.

Name _____ Date _____



1. $-9 + (-5) =$

2. $5 + (-4) =$

3. $17 + (-3) =$

4. $1 + (-3) =$

5. $-20 + 1 =$

6. $20 + (-12) =$

7. $-2 + 0 =$

8. $-9 + (-12) =$

9. $-11 + 2 =$

10. $-16 + 16 =$

11. $11 + (-14) =$

12. $18 + (-14) =$

13. $-5 + (-3) =$

14. $0 + (-20) =$

15. $-3 + 6 =$

16. $14 + (-14) =$

17. $-7 + 18 =$

18. $-14 + (-11) =$

19. $1 + (-18) =$

20. $-16 + 2 =$

Subtracting integers

Subtracting a number is adding its opposite: 5 - (-3) = 5 + 3. Then add.

Name _____ Date _____



1. -16 - (-1) =

2. -19 - 14 =

3. 1 - 14 =

4. -3 - (-3) =

5. -20 - 12 =

6. 9 - (-14) =

7. 0 - 9 =

8. -4 - (-19) =

9. 18 - 20 =

10. 20 - (-15) =

11. -7 - (-4) =

12. 19 - (-20) =

13. 3 - 10 =

14. 11 - 20 =

15. 0 - 10 =

16. -5 - (-1) =

17. 17 - (-13) =

18. -19 - 11 =

19. -18 - (-18) =

20. -13 - 1 =

Adding and subtracting integers

Watch the sign. To subtract, add the opposite; then add.

Name _____ Date _____



1. $-16 + 16 =$

2. $-1 + 7 =$

3. $-20 + (-8) =$

4. $11 + (-16) =$

5. $-15 - (-11) =$

6. $-10 - 13 =$

7. $18 - (-3) =$

8. $2 + (-17) =$

9. $15 - 19 =$

10. $-7 - (-2) =$

11. $-19 - (-19) =$

12. $1 - 8 =$

13. $-2 + (-5) =$

14. $-1 + 9 =$

15. $-2 + 2 =$

16. $-15 - 5 =$

17. $-1 - (-12) =$

18. $6 + (-7) =$

19. $2 - (-19) =$

20. $-9 + 3 =$

Multiplying and dividing integers

Two negatives make a positive; one negative makes the answer negative.

Name _____ Date _____

1. $0 \div (-4) =$
2. $-7 \times (-12) =$
3. $0 \times (-7) =$
4. $-40 \div 10 =$
5. $40 \div (-10) =$
6. $-3 \times 4 =$
7. $-10 \times (-5) =$
8. $2 \times (-9) =$
9. $-48 \div (-6) =$
10. $-6 \div (-3) =$
11. $0 \div (-10) =$
12. $-54 \div (-9) =$
13. $-15 \div 5 =$
14. $-70 \div (-10) =$
15. $16 \div (-2) =$
16. $-4 \times (-11) =$
17. $2 \times (-7) =$
18. $-9 \times 9 =$
19. $-6 \times 0 =$
20. $-3 \times (-2) =$

Percent increase and decrease

Percent change is the change divided by the starting amount, times 100.

Name _____ Date _____

1. Decrease 180 by 10%.
2. Increase 220 by 10%.
3. Decrease 160 by 15%.
4. Percent decrease from 120 to 96?
5. Percent decrease from 64 to 32?
6. Percent increase from 164 to 246?
7. Increase 200 by 75%.
8. Percent increase from 10 to 20?
9. Percent decrease from 460 to 368?
10. Percent increase from 60 to 63?
11. Increase 80 by 75%.
12. Percent increase from 340 to 442?
13. Percent increase from 60 to 72?
14. Decrease 20 by 10%.
15. Percent decrease from 20 to 17?
16. Percent decrease from 52 to 26?
17. Percent decrease from 92 to 69?
18. Increase 160 by 5%.
19. Percent increase from 15 to 30?
20. Decrease 145 by 40%.

Discounts, sales tax and tips

Find the percent of the price, then add it or take it away if the question asks for a total.

Name _____ Date _____

1. A bike helmet costs $66.50. It is 30% off. What is the sale price?

2. A family dinner comes to $41.00. How much is a 20% tip?

3. A backpack costs $19.50 and the sales tax is 4%. What is the total?

4. A shop buys a jacket for $43.00 and marks it up 25%. What does the shop sell it for?

5. A backpack costs $34.00 and the sales tax is 7%. What is the total?

6. A jacket costs $158.00. It is 30% off. What is the sale price?

7. A bike helmet costs $92.00 and the sales tax is 8%. What is the total?

8. A restaurant bill comes to $87.50. How much is a 20% tip?

9. A salesperson earns 10% commission. How much is it on a sale of $850.00?

10. A board game costs $10.50. It is 40% off. What is the sale price?

Two-step equations

Solve each equation. Show your working, and write the answer on the line.

Name _____ Date _____

1. $3x + 5 = 26$

   x = _____

2. $8 = 4x - 12$

   x = _____

3. $5 = \frac{x}{4} + 4$

   x = _____

4. $9x + 17 = 125$

   x = _____

5. $10 + 3x = 40$

   x = _____

6. $8x - 4 = 76$

   x = _____

7. $\frac{x}{7} + 2 = 9$

   x = _____

8. $8x + 16 = 40$

   x = _____

9. $20 + 4x = 40$

   x = _____

10. $31 = 4x - 5$

    x = _____

11. $\frac{x}{9} + 15 = 19$

    x = _____

12. $5x + 7 = 67$

    x = _____

Two-step equations

Solve each equation. Show your working, and write the answer on the line.

Name _____ Date _____

1. $8(x + 1) = 72$

x = _____

2. $98 = 7(x + 6)$

x = _____

3. $5(x + 2) = 50$

x = _____

4. $3(x + 1) = 36$

x = _____

5. $5(x + 7) = 95$

x = _____

6. $60 = 4(x + 6)$

x = _____

7. $3(x + 12) = 57$

x = _____

8. $2(x + 2) = 26$

x = _____

9. $8(x + 5) = 72$

x = _____

10. $48 = 8(x + 3)$

x = _____

11. $4(x + 9) = 60$

x = _____

12. $5(x + 4) = 75$

x = _____

Two-step equations

Solve for the letter in each equation. Show your working, and write the answer on the line.

Name _____ Date _____

1. $6x - 11 = -35$

   x = _____

2. $5 = \frac{a}{9} + 2$

   a = _____

3. $7m - 3 = 11$

   m = _____

4. $3(n - 4) = -18$

   n = _____

5. $-4t - 3 = -35$

   t = _____

6. $\frac{m}{6} - 4 = -9$

   m = _____

7. $-2x - 12 = -32$

   x = _____

8. $7(x + 2) = -21$

   x = _____

9. $-2y - 18 = -20$

   y = _____

10. $16 = \frac{p}{8} + 12$

    p = _____

11. $23 = -2x - 1$

    x = _____

12. $-3(y + 1) = -30$

    y = _____

Adding integers: answer key

Each answer in colour, with the working before it.

1. $-9 + (-5) = -(9 + 5) = -14$
2. $5 + (-4) = 5 - 4 = 1$
3. $17 + (-3) = 17 - 3 = 14$
4. $1 + (-3) = -(3 - 1) = -2$
5. $-20 + 1 = -(20 - 1) = -19$
6. $20 + (-12) = 20 - 12 = 8$
7. $-2 + 0 = -2$
8. $-9 + (-12) = -(9 + 12) = -21$
9. $-11 + 2 = -(11 - 2) = -9$
10. $-16 + 16 = 0$
11. $11 + (-14) = -(14 - 11) = -3$
12. $18 + (-14) = 18 - 14 = 4$
13. $-5 + (-3) = -(5 + 3) = -8$
14. $0 + (-20) = -20$
15. $-3 + 6 = 6 - 3 = 3$
16. $14 + (-14) = 0$
17. $-7 + 18 = 18 - 7 = 11$
18. $-14 + (-11) = -(14 + 11) = -25$
19. $1 + (-18) = -(18 - 1) = -17$
20. $-16 + 2 = -(16 - 2) = -14$

Subtracting integers: answer key

Each answer in colour, with the working before it.

1. $-16 - (-1) = -16 + 1 = -15$
2. $-19 - 14 = -19 + (-14) = -33$
3. $1 - 14 = 1 + (-14) = -13$
4. $-3 - (-3) = -3 + 3 = 0$
5. $-20 - 12 = -20 + (-12) = -32$
6. $9 - (-14) = 9 + 14 = 23$
7. $0 - 9 = -9$
8. $-4 - (-19) = -4 + 19 = 15$
9. $18 - 20 = 18 + (-20) = -2$
10. $20 - (-15) = 20 + 15 = 35$
11. $-7 - (-4) = -7 + 4 = -3$
12. $19 - (-20) = 19 + 20 = 39$
13. $3 - 10 = 3 + (-10) = -7$
14. $11 - 20 = 11 + (-20) = -9$
15. $0 - 10 = -10$
16. $-5 - (-1) = -5 + 1 = -4$
17. $17 - (-13) = 17 + 13 = 30$
18. $-19 - 11 = -19 + (-11) = -30$
19. $-18 - (-18) = -18 + 18 = 0$
20. $-13 - 1 = -13 + (-1) = -14$

Adding and subtracting integers: answer key

Each answer in colour, with the working before it.

1. $-16 + 16 = 0$
2. $-1 + 7 = 7 - 1 = 6$
3. $-20 + (-8) = -(20 + 8) = -28$
4. $11 + (-16) = -(16 - 11) = -5$
5. $-15 - (-11) = -15 + 11 = -4$
6. $-10 - 13 = -10 + (-13) = -23$
7. $18 - (-3) = 18 + 3 = 21$
8. $2 + (-17) = -(17 - 2) = -15$
9. $15 - 19 = 15 + (-19) = -4$
10. $-7 - (-2) = -7 + 2 = -5$
11. $-19 - (-19) = -19 + 19 = 0$
12. $1 - 8 = 1 + (-8) = -7$
13. $-2 + (-5) = -(2 + 5) = -7$
14. $-1 + 9 = 9 - 1 = 8$
15. $-2 + 2 = 0$
16. $-15 - 5 = -15 + (-5) = -20$
17. $-1 - (-12) = -1 + 12 = 11$
18. $6 + (-7) = -(7 - 6) = -1$
19. $2 - (-19) = 2 + 19 = 21$
20. $-9 + 3 = -(9 - 3) = -6$

Multiplying and dividing integers: answer key

Each answer in colour, with the working before it.

1. $0 \div (-4) = 0$
2. $-7 \times (-12) = 7 \times 12 = 84$
3. $0 \times (-7) = 0$
4. $-40 \div 10 = -(40 \div 10) = -4$
5. $40 \div (-10) = -(40 \div 10) = -4$
6. $-3 \times 4 = -(3 \times 4) = -12$
7. $-10 \times (-5) = 10 \times 5 = 50$
8. $2 \times (-9) = -(2 \times 9) = -18$
9. $-48 \div (-6) = 48 \div 6 = 8$
10. $-6 \div (-3) = 6 \div 3 = 2$
11. $0 \div (-10) = 0$
12. $-54 \div (-9) = 54 \div 9 = 6$
13. $-15 \div 5 = -(15 \div 5) = -3$
14. $-70 \div (-10) = 70 \div 10 = 7$
15. $16 \div (-2) = -(16 \div 2) = -8$
16. $-4 \times (-11) = 4 \times 11 = 44$
17. $2 \times (-7) = -(2 \times 7) = -14$
18. $-9 \times 9 = -(9 \times 9) = -81$
19. $-6 \times 0 = 0$
20. $-3 \times (-2) = 3 \times 2 = 6$

Percent increase and decrease: answer key

Each answer in colour, with the working before it.

1. 10% of 180 = 18; 180 − 18 = 162
2. 10% of 220 = 22; 220 + 22 = 242
3. 15% of 160 = 24; 160 − 24 = 136
4. 120 − 96 = 24; 24 ÷ 120 = 0.2; 0.2 × 100 = 20%
5. 64 − 32 = 32; 32 ÷ 64 = 0.5; 0.5 × 100 = 50%
6. 246 − 164 = 82; 82 ÷ 164 = 0.5; 0.5 × 100 = 50%
7. 75% of 200 = 150; 200 + 150 = 350
8. 20 − 10 = 10; 10 ÷ 10 = 1; 1 × 100 = 100%
9. 460 − 368 = 92; 92 ÷ 460 = 0.2; 0.2 × 100 = 20%
10. 63 − 60 = 3; 3 ÷ 60 = 0.05; 0.05 × 100 = 5%
11. 75% of 80 = 60; 80 + 60 = 140
12. 442 − 340 = 102; 102 ÷ 340 = 0.3; 0.3 × 100 = 30%
13. 72 − 60 = 12; 12 ÷ 60 = 0.2; 0.2 × 100 = 20%
14. 10% of 20 = 2; 20 − 2 = 18
15. 20 − 17 = 3; 3 ÷ 20 = 0.15; 0.15 × 100 = 15%
16. 52 − 26 = 26; 26 ÷ 52 = 0.5; 0.5 × 100 = 50%
17. 92 − 69 = 23; 23 ÷ 92 = 0.25; 0.25 × 100 = 25%
18. 5% of 160 = 8; 160 + 8 = 168
19. 30 − 15 = 15; 15 ÷ 15 = 1; 1 × 100 = 100%
20. 40% of 145 = 58; 145 − 58 = 87

Discounts, sales tax and tips: answer key

Each answer in colour, with the working before it.

1. 30% of $66.50 = $19.95; $66.50 − $19.95 = **$46.55**
2. 20% = 0.2; 0.2 × $41.00 = **$8.20**
3. 4% of $19.50 = $0.78; $19.50 + $0.78 = **$20.28**
4. 25% of $43.00 = $10.75; $43.00 + $10.75 = **$53.75**
5. 7% of $34.00 = $2.38; $34.00 + $2.38 = **$36.38**
6. 30% of $158.00 = $47.40
   $158.00 − $47.40 = **$110.60**
7. 8% of $92.00 = $7.36; $92.00 + $7.36 = **$99.36**
8. 20% = 0.2; 0.2 × $87.50 = **$17.50**
9. 10% = 0.1; 0.1 × $850.00 = **$85.00**
10. 40% of $10.50 = $4.20; $10.50 − $4.20 = **$6.30**

Two-step equations: answer key

Each equation worked one step a line. What was done to both sides is beside each step.

1. $3x + 5 = 26$
   $3x = 21$ Subtract 5 from both sides.
   $x = 7$ Divide both sides by 3.
   Check: $3(7) + 5 = 26$

2. $8 = 4x - 12$
   $20 = 4x$ Add 12 to both sides.
   $5 = x$ Divide both sides by 4.
   $x = 5$
   Check: $8 = 4(5) - 12$

3. $5 = \frac{x}{4} + 4$
   $1 = \frac{x}{4}$ Subtract 4 from both sides.
   $4 = x$ Multiply both sides by 4.
   $x = 4$
   Check: $5 = \frac{4}{4} + 4$

4. $9x + 17 = 125$
   $9x = 108$ Subtract 17 from both sides.
   $x = 12$ Divide both sides by 9.
   Check: $9(12) + 17 = 125$

5. $10 + 3x = 40$
   $3x = 30$ Subtract 10 from both sides.
   $x = 10$ Divide both sides by 3.
   Check: $10 + 3(10) = 40$

6. $8x - 4 = 76$
   $8x = 80$ Add 4 to both sides.
   $x = 10$ Divide both sides by 8.
   Check: $8(10) - 4 = 76$

7. $\frac{x}{7} + 2 = 9$
   $\frac{x}{7} = 7$ Subtract 2 from both sides.
   $x = 49$ Multiply both sides by 7.
   Check: $\frac{49}{7} + 2 = 9$

8. $8x + 16 = 40$
   $8x = 24$ Subtract 16 from both sides.
   $x = 3$ Divide both sides by 8.
   Check: $8(3) + 16 = 40$

9. $20 + 4x = 40$
   $4x = 20$ Subtract 20 from both sides.
   $x = 5$ Divide both sides by 4.
   Check: $20 + 4(5) = 40$

10. $31 = 4x - 5$
    $36 = 4x$ Add 5 to both sides.
    $9 = x$ Divide both sides by 4.
    $x = 9$
    Check: $31 = 4(9) - 5$

11. $\frac{x}{9} + 15 = 19$
    $\frac{x}{9} = 4$ Subtract 15 from both sides.
    $x = 36$ Multiply both sides by 9.
    Check: $\frac{36}{9} + 15 = 19$

12. $5x + 7 = 67$
    $5x = 60$ Subtract 7 from both sides.
    $x = 12$ Divide both sides by 5.
    Check: $5(12) + 7 = 67$

Two-step equations: answer key

Each equation worked one step a line. What was done to both sides is beside each step.

1. $8(x + 1) = 72$
   $x + 1 = 9$ Divide both sides by 8.
   $x = 8$ Subtract 1 from both sides.
   Check: $8(8 + 1) = 72$

2. $98 = 7(x + 6)$
   $14 = x + 6$ Divide both sides by 7.
   $8 = x$ Subtract 6 from both sides.
   $x = 8$
   Check: $98 = 7(8 + 6)$

3. $5(x + 2) = 50$
   $x + 2 = 10$ Divide both sides by 5.
   $x = 8$ Subtract 2 from both sides.
   Check: $5(8 + 2) = 50$

4. $3(x + 1) = 36$
   $x + 1 = 12$ Divide both sides by 3.
   $x = 11$ Subtract 1 from both sides.
   Check: $3(11 + 1) = 36$

5. $5(x + 7) = 95$
   $x + 7 = 19$ Divide both sides by 5.
   $x = 12$ Subtract 7 from both sides.
   Check: $5(12 + 7) = 95$

6. $60 = 4(x + 6)$
   $15 = x + 6$ Divide both sides by 4.
   $9 = x$ Subtract 6 from both sides.
   $x = 9$
   Check: $60 = 4(9 + 6)$

7. $3(x + 12) = 57$
   $x + 12 = 19$ Divide both sides by 3.
   $x = 7$ Subtract 12 from both sides.
   Check: $3(7 + 12) = 57$

8. $2(x + 2) = 26$
   $x + 2 = 13$ Divide both sides by 2.
   $x = 11$ Subtract 2 from both sides.
   Check: $2(11 + 2) = 26$

9. $8(x + 5) = 72$
   $x + 5 = 9$ Divide both sides by 8.
   $x = 4$ Subtract 5 from both sides.
   Check: $8(4 + 5) = 72$

10. $48 = 8(x + 3)$
    $6 = x + 3$ Divide both sides by 8.
    $3 = x$ Subtract 3 from both sides.
    $x = 3$
    Check: $48 = 8(3 + 3)$

11. $4(x + 9) = 60$
    $x + 9 = 15$ Divide both sides by 4.
    $x = 6$ Subtract 9 from both sides.
    Check: $4(6 + 9) = 60$

12. $5(x + 4) = 75$
    $x + 4 = 15$ Divide both sides by 5.
    $x = 11$ Subtract 4 from both sides.
    Check: $5(11 + 4) = 75$

Two-step equations: answer key

Each equation worked one step a line. What was done to both sides is beside each step.

1. $6x - 11 = -35$
   $6x = -24$ Add 11 to both sides.
   $x = -4$ Divide both sides by 6.
   Check: $6(-4) - 11 = -35$

2. $5 = \frac{a}{9} + 2$
   $3 = \frac{a}{9}$ Subtract 2 from both sides.
   $27 = a$ Multiply both sides by 9.
   $a = 27$
   Check: $5 = \frac{27}{9} + 2$

3. $7m - 3 = 11$
   $7m = 14$ Add 3 to both sides.
   $m = 2$ Divide both sides by 7.
   Check: $7(2) - 3 = 11$

4. $3(n - 4) = -18$
   $n - 4 = -6$ Divide both sides by 3.
   $n = -2$ Add 4 to both sides.
   Check: $3(-2 - 4) = -18$

5. $-4t - 3 = -35$
   $-4t = -32$ Add 3 to both sides.
   $t = 8$ Divide both sides by −4.
   Check: $-4(8) - 3 = -35$

6. $\frac{m}{6} - 4 = -9$
   $\frac{m}{6} = -5$ Add 4 to both sides.
   $m = -30$ Multiply both sides by 6.
   Check: $\frac{-30}{6} - 4 = -9$

7. $-2x - 12 = -32$
   $-2x = -20$ Add 12 to both sides.
   $x = 10$ Divide both sides by −2.
   Check: $-2(10) - 12 = -32$

8. $7(x + 2) = -21$
   $x + 2 = -3$ Divide both sides by 7.
   $x = -5$ Subtract 2 from both sides.
   Check: $7(-5 + 2) = -21$

9. $-2y - 18 = -20$
   $-2y = -2$ Add 18 to both sides.
   $y = 1$ Divide both sides by −2.
   Check: $-2(1) - 18 = -20$

10. $16 = \frac{p}{8} + 12$
    $4 = \frac{p}{8}$ Subtract 12 from both sides.
    $32 = p$ Multiply both sides by 8.
    $p = 32$
    Check: $16 = \frac{32}{8} + 12$

11. $23 = -2x - 1$
    $24 = -2x$ Add 1 to both sides.
    $-12 = x$ Divide both sides by −2.
    $x = -12$
    Check: $23 = -2(-12) - 1$

12. $-3(y + 1) = -30$
    $y + 1 = 10$ Divide both sides by −3.
    $y = 9$ Subtract 1 from both sides.
    Check: $-3(9 + 1) = -30$