Summer Math Packet

Welcome to your Summer Math Packet. Over the summer months, students tend to lose at least one month's worth of information due to "not using their brains" (at least not the same way they do during school time). Who wants to have to relearn everything? What a waste of time!! One way to reduce that loss is by keeping your brain active – hence, this packet.

This packet has been designed to review skills you have already learned and will need to succeed in math next year. Each grade has their own packet, this one was designed for you, the student going into Algebra I (grade 8).

For the most part, there are 10-12 pages in each packet – one for each week of summer. If you want to take a break the first week of summer, do so, just make sure you do an extra page another week. The same thing goes for any weeks of vacation you may take. Most, if not all of the pages, have information about how to do the math on the page, so that you and your parents can figure it out if you are having trouble. If you still can't figure it out, try www.khanacademy.org. It should not take more than 30 minutes to do any of these pages each week.

This IS REQUIRED – it will go into the grade book as a grade based on what you have complete. All those who complete it will also receive a treat in September, in recognition of your hard work. Please do not lose this, but if you do, it can be found on the school website.

Please be ready to turn this in to Mrs. Cawood by the second day of school.

Enjoy your summer!

Keep thinkin'!

Mrs. Jackson (Mrs. J)

Name _____ Class _____ Date _____

Review 209

Algebraic Expressions and the Order of Operations

A *variable* represents a number. An *algebraic expression* is formed from numbers, variables, and operations.

To evaluate an algebraic expression, substitute a number for each variable. Then follow the order of operations.

	Evaluate $4(n + 2)$ for $n = 3$.	Evaluate $n + 12 \div (3 \times m)$ for $n = 4$ and $m = 2$.
① Substitute for each variable.	$4(3 + 2)$	$4 + 12 \div (3 \times 2)$
② Work inside grouping symbols.	$= 4(5)$	$= 4 + 2 \div 6$
③ Multiply and divide from left to right.	$= 20$	$= 4 + 2$
④ Add and subtract from left to right.		$= 6$

Evaluate each expression for $g = 4$, $k = 2$, and $t = 9$.

1. $4t$ _____

2. $3k$ _____

3. $g + 4$ _____

4. $5t + 7$ _____

5. $4(g - 1)$ _____

6. $15k + 6$ _____

7. $3t - g$ _____

8. $gt \div k$ _____

9. $27 \div t \times k$ _____

10. $g + 12 - 3 \times k$ _____

11. $32 \div g \times k$ _____

12. $(2t + 2) \div g$ _____

13. $(20 \div g) \times k$ _____

14. $4g + t - k$ _____

15. $3(3g - t)$ _____

16. $2g + 2 \times 3$ _____

17. $kt - 3$ _____

18. $10 + 4k \div 8$ _____

19. The formula for the perimeter of a rectangle is $P = 2l + 2w$. If $l = 2$ in. and $w = 4$ in., what operation(s) would you do first?

_____

Name _____ Class _____ Date _____

Practice 1-2

The Order of Operations

Simplify each expression. Use PEMDAS

1. $3 + 15 - 5 \cdot 2$ _____
2. $5 \cdot 6 + 2 \cdot 4$ _____
3. $48 \div 8 - 1$ _____
4. $68 - 12 \div 2 \div 3$ _____
5. $6(2 + 7)$ _____
6. $25 - (6 \cdot 4)$ _____
7. $3[9 - (6 - 3)] - 10$ _____
8. $60 \div (3 + 12)$ _____
9. $4 - 2 + 6 \cdot 2$ _____
10. $18 \div (5 - 2)$ _____
11. $\frac{16 + 24}{30 - 22}$ _____
12. $2[4(9 - 7) + 1]$ _____
13. $(8 \div 8 + 2 + 11) \div 2$ _____
14. $9 + 3 \cdot 4$ _____
15. $18 \div 3 \cdot 5 - 4$ _____
16. $10 + 28 \div 14 - 5$ _____

Insert grouping symbols to make each number sentence true.

17. $3 + 5 \cdot 8 = 64$
18. $4 \cdot 6 - 2 + 7 = 23$
19. $10 \div 3 + 2 \cdot 4 = 8$
20. $3 + 6 \cdot 2 = 18$

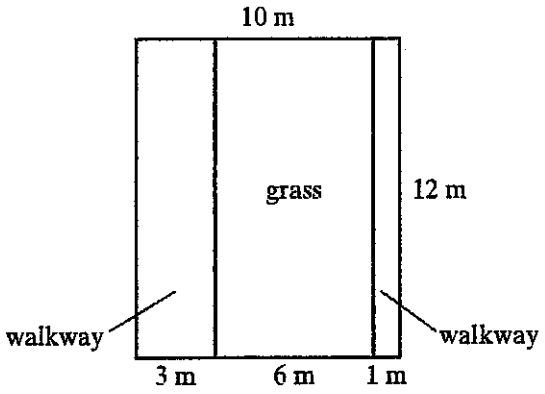
A city park has two walkways with a grassy area in the center, as shown in the diagram.

21. Write an expression for the area of the walkways, using subtraction.

_____

22. Write an expression for the area of the walkways, using addition.

_____



Compare. Use >, <, or = to complete each statement.

23. $(24 - 8) \div 4 \square 24 - 8 \div 4$
24. $3 \cdot (4 - 2) \cdot 5 \square 3 \cdot 4 - 2 \cdot 5$
25. $(22 + 8) \div 2 \square 22 + 8 \div 2$
26. $20 \div 2 + 8 \cdot 2 \square 20 \div (2 + 8) \cdot 2$
27. $11 \cdot 4 - 2 \square 11 \cdot (4 - 2)$
28. $(7 \cdot 3) - (4 \cdot 2) \square 7 \cdot 3 - 4 \cdot 2$

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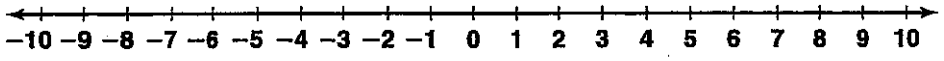
Review 211

Integers and Absolute Value

Integers are the set of whole numbers and their opposites. Negative integers are to the left of zero on a number line. Positive integers are to the right of zero on a number line.

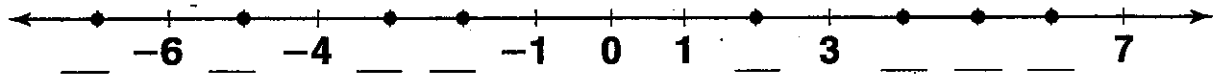


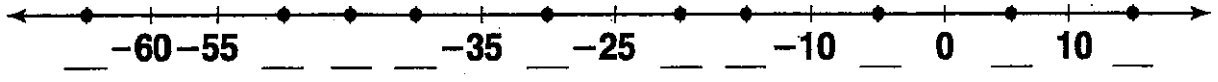
−5 is to the left of −2.	−7 is to the left of 4.	6 is to the right of 3.
−5 is less than −2.	−7 < 4	6 is greater than 3.
−5 < −2		6 > 3

The *absolute value* of a number is its distance from zero on a number line. The absolute value of 5 is written as $|5|$

−3 is 3 units from 0.	2 is 2 units from 0.	0 is 0 units from 0.
$\|-3\| = 3$	$\|2\| = 2$	$\|0\| = 0$

Write the integers missing from each number line.

1. 

2. 

Compare. Write <, >, or =.

3. 6 ☐ 0	4. −8 ☐ −5	5. −2 ☐ 2
6. 12 ☐ 5	7. 3 ☐ −2	8. −4 ☐ −6
9. −5 ☐ 5	10. −5 ☐ −10	11. 0 ☐ 0
12. 8 ☐ −1	13. −4 ☐ 0	14. 4 ☐ −2

Find each absolute value.

15. $\|3\|$ _____	16. $\|-2\|$ _____	17. $\|10\|$ _____
18. $\|-4\|$ _____	19. $\|4\|$ _____	20. $\|0\|$ _____
21. $\|-1\|$ _____	22. $\|-18\|$ _____	23. $\|50\|$ _____

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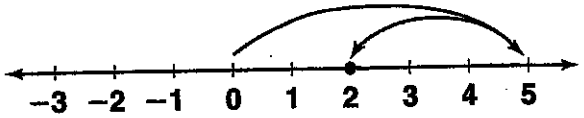
Review 212

Adding and Subtracting Integers

A number line can help you add integers. For positive integers, move to the right. For negative integers, move to the left.

Example Add $5 + (-3)$:

First, move 5 spaces to the right.
Then move 3 spaces to the left.



$5 + (-3) = 2$

- To add integers with the same sign, add absolute values and use the same sign.

  $3 + 5 = 8$ $\quad -2 + -4 = -6$

- To add integers with different signs, subtract absolute values and use the sign of the integer with the greater absolute value.

  $-7 + 3 = ?$
  $|-7| - |3| = 7 - 3 = 4$
  Use the sign of -7.
  So, $-7 + 3 = -4$.

- To subtract an integer, add its opposite.

  $3 - (-2) = 3 + 2 = 5$ The opposite of -2 is 2.

  $3 - 4 = 3 + (-4) = -1$ The opposite of 4 is -4.

  $-4 - (-5) = -4 + 5 = 1$ The opposite of -5 is 5.

Simplify each expression.

1. $8 + (-4) =$ _____
2. $8 + 4 =$ _____
3. $-8 + 4 =$ _____
4. $-3 + (-3) =$ _____
5. $6 + (-2) =$ _____
6. $11 + (-16) =$ _____
7. $-7 + 11 =$ _____
8. $-4 + 16 =$ _____
9. $8 + (-12) =$ _____
10. $-9 + (-10) =$ _____
11. $23 + (-3) =$ _____
12. $-5 + 2 =$ _____
13. $9 - (-3) =$ _____
14. $18 - 14 =$ _____
15. $-6 - 7 =$ _____
16. $-3 - (-3) =$ _____
17. $-4 - 16 =$ _____
18. $8 - (-9) =$ _____
19. $-3 - 12 =$ _____
20. $6 - (-2) =$ _____
21. $10 - (-16) =$ _____
22. $-9 - (-10) =$ _____
23. $2 - (-3) =$ _____
24. $-5 - 2 =$ _____
25. $12 - 32 =$ _____
26. $42 - (-15) =$ _____
27. $-16 - 23 =$ _____

28. You owe your teacher $26 for the class trip. You give her a payment of $11. How much do you still owe?

    _____

29. A golf ball is 6 inches under water. While trying to retrieve it, the golfer accidentally kicks it so that it descends another 9 inches. How far under the surface of the water is the golf ball?

    _____

Name _____ Class _____ Date _____

Review 213

Multiplying and Dividing Integers

- If two integers have the same sign, the product is positive.

  $8 \cdot 7 = 56$ $(-8) \cdot (-7) = 56$

- If two integers have opposite signs, the product is negative.

  $(-8) \cdot 7 = -56$ $8 \cdot (-7) = -56$

- If two integers have the same sign, the quotient is positive.

  $8 \div 2 = 4$ $(-8) \div (-2) = 4$

- If two integers have opposite signs, the quotient is negative.

  $(-8) \div 2 = -4$ $8 \div (-2) = -4$

Determine the sign of the product.

1. $-9 \cdot 3 =$ ☐27
2. $80 \cdot (-2) =$ ☐160
3. $-23 \cdot (-20) =$ ☐460
4. $7 \cdot (-5) =$ ☐35
5. $-6 \cdot (-8) =$ ☐48
6. $64 \cdot 5 =$ ☐320

Determine the sign of the quotient.

7. $24 \div (-3) =$ ☐8
8. $-(24) \div (-2) =$ ☐12
9. $-25 \div 5 =$ ☐5
10. $-27 \div (-9) =$ ☐3
11. $160 \div 4 =$ ☐40
12. $90 \div (-30) =$ ☐3

Simplify each expression.

13. $12 \cdot (-3)$
14. $-9 \cdot (-9)$
15. $9 \cdot (-1)$
16. $(-8) \cdot (-4)$
17. $5 \cdot 70$
18. $(-8) \cdot (-3)$
19. $-10 \cdot (-5)$
20. $-9 \cdot 8$
21. $4 \cdot 7$
22. $14 \cdot (-3)$
23. $-16 \cdot (-3)$
24. $5 \cdot (-25)$
25. $\frac{30}{5}$
26. $\frac{-72}{-8}$
27. $\frac{45}{-9}$
28. $-2 \div (-2)$
29. $6 \div (-1)$
30. $40 \div 2$
31. $48 \div (-12)$
32. $-99 \div (-9)$
33. $-21 \div 3$
34. $-33 \div 3$
35. $100 \div (-5)$
36. $75 \div (-3)$

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Review 215

Powers and Exponents

Follow the order of operations when evaluating expressions with exponents.

Example 1 Evaluate $-(3 + 1)^2 + 5 \cdot 3^2$

① Work inside grouping symbols first. $-(3 + 1)^2 + 5 \cdot 3^2 = -(4)^2 + 5 \cdot 3^2$

② Work with exponents. $= -16 + 5(9)$

- To evaluate a power, write the factors and multiply.

$5^4 = 5 \cdot 5 \cdot 5 \cdot 5 = 625$ $(-2)^4 = (-2) \cdot (-2) \cdot (-2) \cdot (-2) = 16$ $-2^4 = -(2 \cdot 2 \cdot 2 \cdot 2) = -16$

- To multiply numbers or variables with the same base, add the exponents.

Simplify. $3^2 \cdot 3^4 = 3^{(2+4)} = 3^6$ Simplify. $n^3 \cdot n^4 = n^{(3+4)} = n^7$ Simplify. $-4^3 \cdot -4^5 = 4^{(3+5)} = 4^8$

③ Multiply and divide from left to right. $= -16 + 45$

④ Add and subtract from left to right. $= 29$

To evaluate a variable expression with exponents, substitute a number for the variable and then evaluate as above.

Example 2 Evaluate $-2a^3$ for $a = 3$.

$-2a^3 = (-2)(3)^3$
$= (-2)(27)$
$= -54$

Write using exponents.

1. $7 \cdot 7 \cdot 7 =$ _____
2. $(-6) \cdot (-6) \cdot (-6) \cdot (-6) \cdot (-6) =$ _____
3. $10 \cdot 10 \cdot 10 \cdot 10 =$ _____
4. $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 =$ _____
5. $(-8) \cdot (-8) \cdot (-8) \cdot (-8) \cdot (-8) =$ _____
6. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 =$ _____

Simplify each expression.

7. $3^2 + 7 \cdot 9$ _____
8. $9 \cdot 3 - 2^3$ _____
9. $2 + (10 - 3)^2$ _____
10. $6 - 3^2 \cdot 4$ _____

Evaluate each expression for the given values of the variables.

11. $m^2 - 6; m = 4$ _____
12. $4c^3; c = 2$ _____
13. $-2k^2 + 3; k = -5$ _____
14. $2d^2 \div 6; d = 3$ _____
15. $-2n^2 - 4; n = 4$ _____
16. $3ab^2; a = -4, b = 2$ _____

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Review 219

Simplifying Algebraic Expressions

A *term* is a number, a variable, or the product of a number and variable(s). The two terms in $-2x + 4y$ are $-2x$ and $4y$.

Terms with exactly the same variable factor are called *like terms*. In $-3x + 4y + 5x$, $-3x$ and $5x$ are like terms.

One way to *combine like terms* is by addition or subtraction.

- Add to combine like terms in $4y + y$.

  $4y + y = (4 + 1)y = 5y$

- Subtract to combine like terms in $2m - 5m$.

  $2m - 5m = (2 - 5)m = -3m$

To *simplify* an expression, combine its like terms. Perform as many of its operations as possible.

Simplify: $3a + 5b - a + 2b$
$= (3a - a) + (5b + 2b)$
$= 2a + 7b$

Simplify: $2(x - 4)$
$= 2x - 2(4)$
$= 2x - 8$

Combine like terms.

1. $6x + 2x =$ _____
2. $4c - c =$ _____
3. $-h - h =$ _____
4. $-3y + 4y =$ _____
5. $m - 5m =$ _____
6. $6n + n =$ _____
7. $2s - 6s =$ _____
8. $-t - 2t =$ _____
9. $3b - 9b =$ _____
10. $-2p - 5p =$ _____
11. $v + 9v =$ _____
12. $-4j + j =$ _____

Simplify each expression.

13. $8(c - 5) =$ _____
14. $4(d + 6) =$ _____
15. $5n + 3 + n =$ _____
16. $x + 2y + x + y =$ _____
17. $3(m + 4) - 5m =$ _____
18. $(v - 4)5 =$ _____
19. $4a + 2 - 8a + 1 =$ _____
20. $6s + 5 - (s - 6) =$ _____
21. $3(u + 4) - 5u =$ _____
22. $2x + y - (9 - 4x) =$ _____
23. $-5x + 3(x - y) =$ _____
24. $v + 6v - 2v =$ _____
25. $-2s + 6 - s - 4 =$ _____
26. $-x + 4(x - 2) =$ _____
27. $3(k + j) - 4k - k =$ _____
28. $4a - 6 - a + 1 =$ _____

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Review 220

Solving Multi-Step Equations

Combining terms can help solve equations.

Solve: $5n + 6 + 3n = 22$
$5n + 3n + 6 = 22$ ← Commutative Property
$8n + 6 = 22$
$8n + 6 - 6 = 22 - 6$
$8n = 16$
$\frac{8n}{8} = \frac{16}{8}$
$n = 2$

Check: $5n + 6 + 3n = 22$
$5(2) + 6 + 3(2) \stackrel{?}{=} 22$
$22 = 22$ ✔

When an equation has a variable on both sides, add or subtract to get the variable on one side.

Solve: $-6m + 45 = 3m$
$-6m + 6m + 45 = 3m + 6m$ ← Add 6m to each side.
$45 = 9m$
$\frac{45}{9} = \frac{9m}{9}$
$5 = m$

Check: $-6m + 45 = 3m$
$-6(5) + 45 \stackrel{?}{=} 3(5)$
$15 = 15$ ✔

Solve each equation. Check the solution.

1. $a - 4a = 36$; $a =$ _____
2. $3b - 5 - 2b = 5$; $b =$ _____
3. $5n + 4 - 8n = -5$; $n =$ _____
4. $12k + 6 = 10$; $k =$ _____
5. $3(x - 4) = 15$; $x =$ _____
6. $y - 8 + 2y = 10$; $y =$ _____
7. $3(s - 10) = 36$; $s =$ _____
8. $-15 = p + 4p$; $p =$ _____
9. $2g + 3g + 5 = 0$; $g =$ _____
10. $6c + 4 - c = 24$; $c =$ _____
11. $3(x - 2) = 15$; $x =$ _____
12. $4y + 9 - 7y = -6$; $y =$ _____
13. $4(z - 2) + z = -13$; $z =$ _____
14. $24 = -2(b - 3) + 8$; $b =$ _____
15. $17 = 3(g + 3) - g$; $g =$ _____
16. $5(k - 4) = 4 - 3k$; $k =$ _____
17. $8 - m - 3m = 16$; $m =$ _____
18. $6n + n + 14 = 0$; $n =$ _____
19. $7(p + 1) = 9 - p$; $p =$ _____
20. $36 = 4(q - 5)$; $q =$ _____
21. $25 + 2t = 5(t + 2)$; $t =$ _____

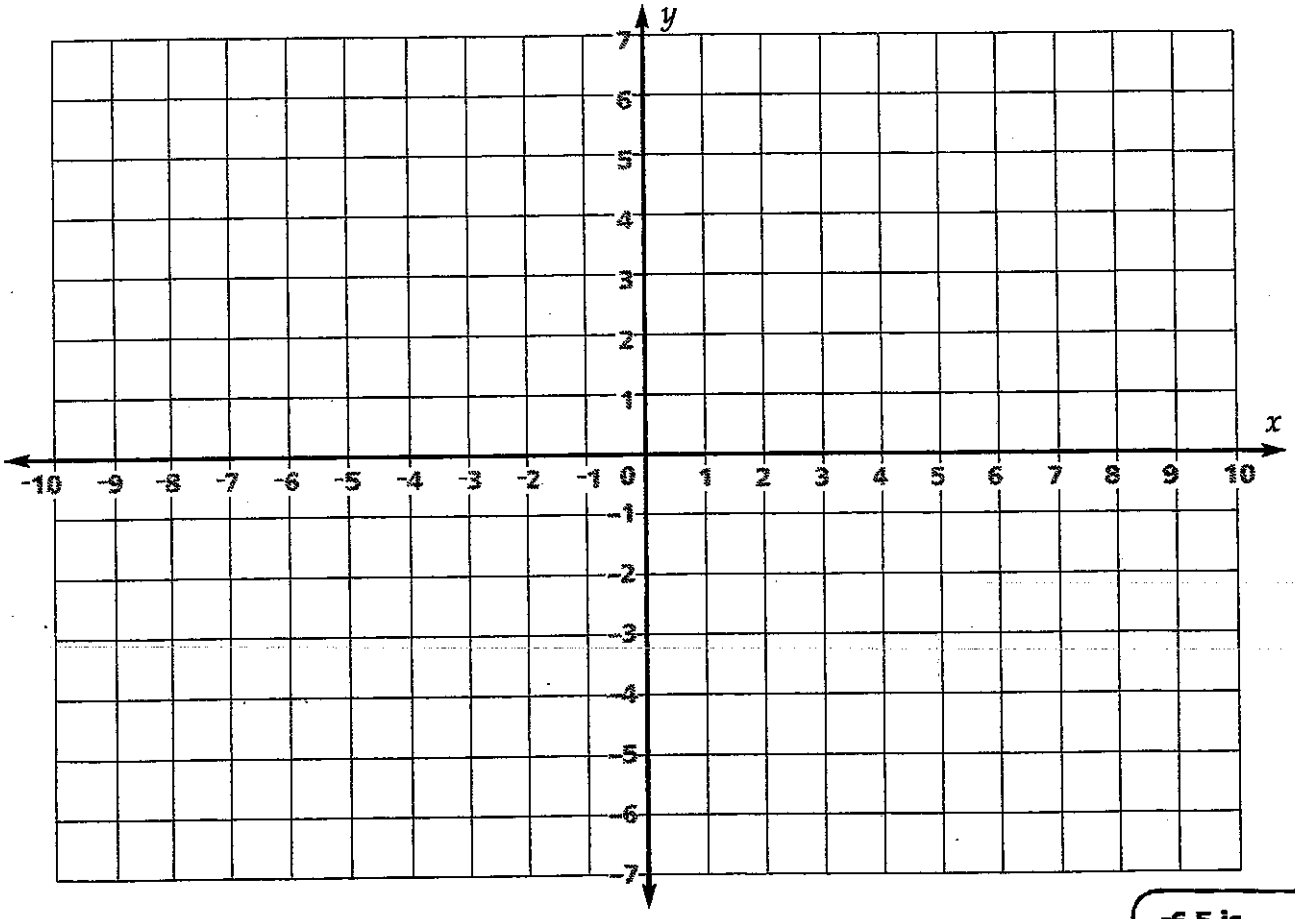
Name _____

Graphing Points

Remember

The first number in an ordered pair is the x-coordinate. It tells how far to move across from the origin. A positive number means *go right.* A negative number means *go left.*

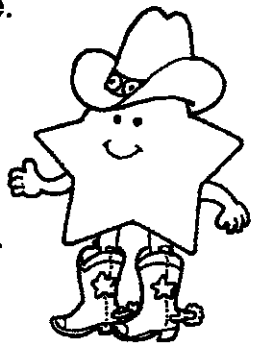
The second number in an ordered pair is the y-coordinate. It tells how far to move up or down. A positive number means *go up.* A negative number means *go down.*



Follow the steps to draw and color the state flag of Texas.

1. To make a rectangle, plot and connect these points in order. Color it red.
   (-3, 0) (3, 0) (9, 0) (9, -6) (3, -6) (-3, -6) (-3, 0)
2. Plot and connect these points to make another rectangle. Leave it white.
   (-3, 0) (-3, 6) (3, 6) (9, 6) (9, 0) (3, 0) (-3, 0)
3. Plot and connect these points to make a star. Leave it white.
   (-8, 1) (-6.5, 1) (-6, 2.5) (-5.5, 1) (-4, 1) (-5, 0) (-4.5, -1.5)
   (-6, -0.5) (-7.5, -1.5) (-7, 0) (-8, 1)
4. Plot and connect these points to make a rectangle surrounding the star. Color its background dark blue.
   (-9, 0) (-9, 6) (-3, 6) (-3, 0) (-3, -6) (-9, -6) (-9, 0)

-6.5 is halfway between -6 and -7



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Review 226

Graphing Equations with Two Variables

You can use a table to help graph a *linear equation* on a coordinate plane.

① Choose a value for x. Solve for y.

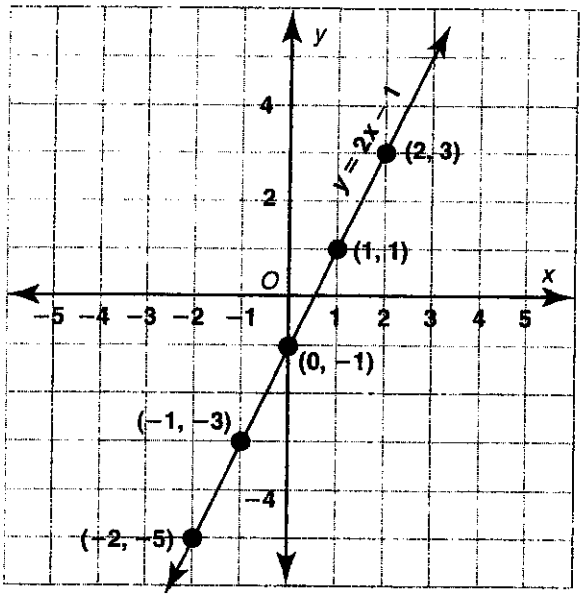
② Find at least 3 such solutions.

③ Graph the solutions.

④ Draw a line through the points.

Graph $y = 2x - 1$.

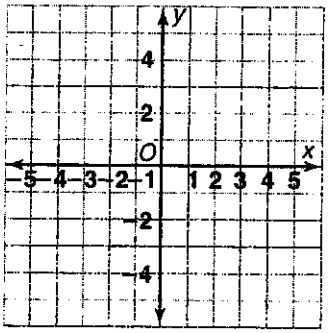
Choose x.	**Solve for y.** $(y = 2x - 1)$	y	(x, y)
-2	$2(-2) - 1$	-5	$(-2, -5)$
-1	$2(-1) - 1$	-3	$(-1, -3)$
0	$2(0) - 1$	-1	$(0, -1)$
1	$2(1) - 1$	1	$(1, 1)$
2	$2(2) - 1$	3	$(2, 3)$



Complete the table. Graph each (x, y) solution. Draw a line through the points.

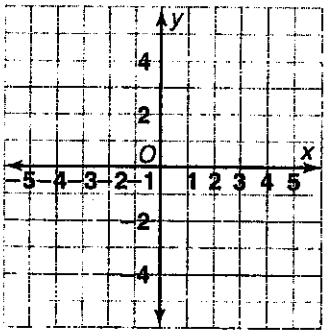
1. $y = \frac{1}{2}x + 3$

x	y
-2	2
0	
2	
4	



2. $y = -2x + 1$

x	y
-1	3
0	
1	
2	



Grade 8 Topics

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Review 238

Adding and Subtracting Rational Numbers

To add or subtract fractions and mixed numbers with unlike denominators, first rewrite the fractions using the least common denominator (LCD).

Subtract: $2\frac{3}{4} - 5\frac{1}{3}$

$$2\frac{3}{4} - 5\frac{1}{3} = \frac{11}{4} - \frac{16}{3}$$
$$= \frac{33}{12} - \frac{64}{12} \quad \leftarrow \text{The LCD is 12.}$$
$$= \frac{-31}{12} \quad \leftarrow \text{Subtract numerators.}$$
$$= -2\frac{7}{12} \quad \leftarrow \text{Simplify.}$$
$$2\frac{3}{4} - 5\frac{1}{3} = -2\frac{7}{12}$$

You can use addition or subtraction to solve equations with rational numbers.

Solve: $h - \frac{3}{8} = \frac{1}{6}$

$$h - \frac{3}{8} + \frac{3}{8} = \frac{1}{6} + \frac{3}{8} \quad \leftarrow \text{Add } \frac{3}{8}.$$
$$h = \frac{4}{24} + \frac{9}{24} \quad \leftarrow \text{The LCD is 24.}$$
$$h = \frac{13}{24}$$

Find each sum or difference as a fraction or mixed number in simplest form.

1. $6\frac{1}{4} - 2\frac{3}{8}$
2. $\frac{5}{6} + \left(-\frac{1}{2}\right)$
3. $-4\frac{1}{3} - \left(-\frac{3}{5}\right)$
4. $\frac{1}{8} - \left(-\frac{1}{6}\right)$
5. $-1\frac{3}{8} - 4\frac{1}{12}$
6. $\frac{7}{10} + \left(-1\frac{2}{5}\right)$
7. $1\frac{5}{8} - \left(-2\frac{1}{2}\right)$
8. $-2\frac{1}{3} - \left(-1\frac{5}{12}\right)$
9. $-10 - \left(3\frac{11}{12}\right)$
10. $1\frac{1}{3} - 4\frac{3}{4}$
11. $9 + \left(-6\frac{5}{9}\right)$
12. $-2\frac{5}{6} - 5\frac{5}{12}$

Solve each equation. Write each answer as a mixed number or as a fraction in simplest form.

13. $y + \frac{7}{8} = -\frac{1}{4}$
14. $c + -\frac{3}{5} = \frac{1}{2}$
15. $m - 3\frac{2}{3} = 1\frac{1}{6}$
16. $x - 2\frac{1}{4} = -3$
17. $n + \frac{1}{2} = -2\frac{5}{6}$
18. $\frac{1}{2} + d = -3\frac{1}{5}$
19. $7.3 + g = 1\frac{4}{5}$
20. $y - 4.1 = 2\frac{3}{4}$
21. $z + 2.6 = 0.37$

Grade 8 Topics

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Review 239

Multiplying and Dividing Rational Numbers

To multiply rational numbers in fraction form, multiply numerators, then multiply denominators.

Multiply: $\frac{7}{12} \cdot 1\frac{4}{5}$

$\frac{7}{12} \cdot \frac{9}{5}$ ← fraction form

$\frac{7 \cdot 9}{12 \cdot 5}$ ← Multiply numerators. Multiply denominators.

$\frac{63}{60} = 1\frac{3}{60} = 1\frac{1}{20}$ ← Simplify.

To divide, multiply by the reciprocal of the divisor.

Divide: $-3\frac{1}{8} \div \frac{2}{3}$

$\frac{-25}{8} \div \frac{2}{3}$ ← fraction form

$\frac{-25}{8} \cdot \frac{3}{2}$ ← reciprocal of divisor

$\frac{-25 \cdot 3}{8 \cdot 2} = \frac{-75}{16}$ ← Multiply.

$= -4\frac{11}{16}$ ← Simplify.

Find each product. Write each answer as a fraction or mixed number in simplest form.

1. $\frac{8}{9} \cdot \left(-\frac{3}{4}\right)$
2. $-\frac{1}{2} \cdot \frac{4}{5}$
3. $-\frac{2}{3} \cdot \left(-\frac{1}{8}\right)$
4. $\frac{5}{6} \cdot \frac{3}{7}$
5. $\frac{3}{4} \cdot \left(-\frac{2}{3}\right)$
6. $3 \cdot 2\frac{1}{4}$
7. $-5\frac{1}{2} \cdot 1\frac{3}{4}$
8. $-2\frac{1}{8} \cdot (-3)$
9. $4\frac{1}{5} \cdot 2\frac{1}{2}$
10. $\frac{13}{15} \cdot \frac{5}{6}$
11. $-3\frac{2}{5} \cdot 2\frac{1}{2}$
12. $-5 \cdot \left(-2\frac{1}{4}\right)$
13. $-\frac{5}{8} \cdot 4\frac{2}{3}$
14. $-5 \cdot 3\frac{3}{10}$
15. $-2\frac{3}{5} \cdot \left(-3\frac{1}{3}\right)$

Find each quotient.

16. $\frac{5}{6} \div \frac{3}{5}$
17. $-\frac{3}{8} \div \left(-\frac{1}{2}\right)$
18. $-6 \div \frac{3}{4}$
19. $4 \div \left(-\frac{2}{3}\right)$
20. $5\frac{1}{4} \div 1\frac{1}{2}$
21. $1\frac{1}{4} \div \left(-\frac{2}{5}\right)$
22. $-\frac{3}{4} \div \left(-1\frac{1}{2}\right)$
23. $-1\frac{3}{5} \div \frac{1}{4}$
24. $2\frac{1}{2} \div \frac{3}{10}$
25. $-\frac{5}{9} \div \left(-\frac{2}{3}\right)$
26. $-6 \div 3\frac{5}{8}$
27. $\frac{3}{4} \div (-9)$

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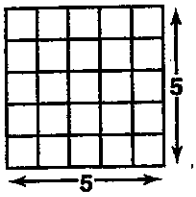
Review 242

Exploring Square Roots and Irrational Numbers

The square of 5 is 25.
$5 \cdot 5 = 5^2 = 25$
The *square root* of 25 is 5 because $5^2 = 25$.

$\sqrt{25} = 5$



$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
} *perfect squares*

You can use a calculator to find square roots.
Example: Find $\sqrt{36}$ and $\sqrt{21}$ to the nearest tenth.

36 [√] = 6 21 [√] ≈ 4.5825757 ≈ 4.6

You can estimate square roots like $\sqrt{52}$ and $\sqrt{61}$.

Perfect squares	49		$\sqrt{49} = 7$		$\sqrt{49} = 7$
	52	Estimate	$\sqrt{52} \approx 7$	Estimate	$\sqrt{61} \approx 8$
	64		$\sqrt{64} = 8$		$\sqrt{64} = 8$

Find each square root. Round to the nearest integer if necessary. Use ≈ to show that a value is rounded.

1. $\sqrt{16}$ _____
2. $\sqrt{85}$ _____
3. $\sqrt{26}$ _____
4. $\sqrt{36}$ _____
5. $\sqrt{98}$ _____
6. $\sqrt{40}$ _____
7. $\sqrt{100}$ _____
8. $\sqrt{18}$ _____
9. $\sqrt{5}$ _____
10. $\sqrt{121}$ _____
11. $\sqrt{68}$ _____
12. $\sqrt{144}$ _____
13. $\sqrt{29}$ _____
14. $\sqrt{64}$ _____
15. $\sqrt{37}$ _____
16. $\sqrt{75}$ _____
17. $\sqrt{225}$ _____
18. $\sqrt{54}$ _____
19. $\sqrt{169}$ _____
20. $\sqrt{103}$ _____
21. $\sqrt{61}$ _____
22. $\sqrt{400}$ _____
23. $\sqrt{119}$ _____
24. $\sqrt{84}$ _____

25. If a whole number is not a perfect square, its square root is an *irrational number.* List the numbers from Exercises 1–24 that are irrational.

_____

_____