

**Quiz 1** .....

1. What is the first step in evaluating the expression  $5 + (2 - 4 \times 3)^2$  ?

- A) Addition
- B) Subtraction
- C) Multiplication
- D) Exponent

Evaluate.

2.  $3 + 16 \div 4$

3.  $4 \times 7 - 2 \times 6 \div 3$

4.  $5^2 - 4 \times (2^3 - 3)$

5.  $(-3)^4 \div 9 \times (4 - 5)^3 + 8$

**Quiz 2** .....

Evaluate.

1.  $4x + 7$  for  $x = -2$

2.  $x^2 - 4xy + 4y^2$  for  $x = 5$  and  $y = 4$

Simplify.

3.  $2x - 3 - x + 5$

4.  $5(x + 1) - 2(4 - x)$

5.  $x - 3(x^2 - x) + 5x + x^2$

**Quiz 3** .....

1. What is the first step in solving the equation  $2x - 1 = 3$  ?

- A) Add 1 to both sides.
- B) Subtract 3 from both sides.
- C) Divide both sides by 2.
- D) Divide both sides by 3.

Solve.

2.  $x + 4 = 10$

3.  $-7x = 63$

4.  $5x + 4 = 19$

5.  $9 - 3x = 24$

**Quiz 4** .....

Solve. Reduce fractions but leave them improper.

1.  $2x + 1 = 7x + 3$

2.  $3x + 2 - x = 5 - 2x + 3$

3.  $8 = 3 - 4(x - 3)$

4.  $6(x - 2) + 5 = 4x - 5$

5.  $-4(x + 1) + 3x = 2(x - 3)$

**Quiz 5** .....

1.  $\frac{1}{2}x + \frac{1}{4} = \frac{2}{3}$

What is the least common denominator of all the fractions in the equation above?

Solve. Reduce fractions but leave them improper.

2.  $0.3x - 1.2 = -0.5x + 0.4$

3.  $0.02x + 0.25 = -0.03x - 0.5$

4.  $\frac{3}{4}x + \frac{1}{5} = \frac{1}{2}x + \frac{2}{5}$

5.  $\frac{1}{2}(3x + 1) = 2x + \frac{3}{4}$

**Quiz 6** .....

Solve. Reduce fractions but leave them improper.

1.  $|3x| = 21$

2.  $|x - 7| = 5$

3.  $|4x + 1| + 3 = 8$

4.  $9 - 3|x - 2| = 4$

5.  $5|2x + 3| + 6 = 21$

**Quiz 7** .....

Solve. Reduce fractions but leave them improper.

1.  $2x + 3 = 9$

2.  $2x - 1 = 5 - 6x$

3.  $5x + 4 = 7 - 2(x + 1)$

4.  $\frac{1}{6}x + \frac{2}{9} = x - \frac{1}{3}$

5.  $17 - 5|2x - 3| = -8$

**Quiz 8** .....

Solve. Reduce fractions but leave them improper.

1.  $x + 3 = x + 5$

2.  $2x - 5 = 3x - 2x$

3.  $4(3x + 2) - x = 11x + 8$

4.  $|4x - 7| + 9 = 3$

5.  $3|x + 4| - 15 = 0$



**Quiz 9** .....

1. The sum of two consecutive even integers is 54. What are the two integers?
  
  
  
  
  
  
  
  
  
  
2. The length of a rectangle is 5 feet less than three times its width. The perimeter is 30 feet. What are the dimensions of the rectangle?
  
  
  
  
  
  
  
  
  
  
3. Luke has \$1.40 in quarters and nickels. He has 2 more quarters than nickels. How many coins of each type does he have?
  
  
  
  
  
  
  
  
  
  
4. Jennifer and her friends went out for dinner. They paid a total of \$60 for their meal, including a tip of 20%. What was the cost of the meal before the tip?
  
  
  
  
  
  
  
  
  
  
5. Michael is 4 years older than Emma. Five years ago, the sum of their ages was 20. How old are they now?

**Quiz 10** .....

1. How long in hours will it take to travel 195 miles at an average speed of 65 mph?
  
  
  
  
  
  
  
2. It takes 20 minutes to drive to a mall at 30 mph. How long in minutes will it take to drive to the mall at 40 mph?
  
  
  
  
  
  
  
3. Eli and Alex began jogging from the same spot at the same time in opposite directions on a 12-mile circular trail. Eli runs at 4 mph, and Alex at 6 mph. How long will it take them to meet?
  
  
  
  
  
  
  
4. Arthur walked around a circular trail twice in a total of 4.5 hours. He walked the circle at 4 mph the first time and at 5 mph the second time. How long is the trail?
  
  
  
  
  
  
  
5. Olivia began cycling a trail at 10 mph. An hour later, Lucas began cycling the trail from the same point in the same direction at 14 mph. How long will it take for Lucas to catch up with Olivia?

**Quiz 11** .....

1. How many grams of salt is in 30 grams of a 20% saline solution?
  
  
  
  
  
  
  
  
  
  
2. How many grams of water must be mixed with 10 grams of salt to produce a 25% saline solution?
  
  
  
  
  
  
  
  
  
  
3. How many ounces of a 10% acid solution must be added to 6 ounces of a 15% acid solution to produce a 12% acid solution?
  
  
  
  
  
  
  
  
  
  
4. Two pounds of nuts costing \$4 per pound are mixed with 3 pounds of nuts costing \$6 per pound. What is the price of the mixture per pound?
  
  
  
  
  
  
  
  
  
  
5. Peanuts cost \$3 per pound. Cashews cost \$5 per pound. How many pounds of peanuts must be mixed with 6 pounds of cashews to make a mixture of nuts that costs \$4.50 per pound?

**Quiz 12** .....Solve for  $y$ .

1.  $2x - 1 = x - y$

2.  $3(x + y) = 4y + 5$

3.  $\frac{1}{3}y + \frac{5}{6}x = x - \frac{2}{3}$

Solve for the specified variable.

4. The formula  $P = 2l + 2w$  gives the perimeter  $P$  of a rectangle with width  $w$  and length  $l$ . Solve the formula for  $w$ .5. The formula  $F = \frac{9}{5}C + 32$  gives the Fahrenheit temperature  $F$  for a given Celsius temperature  $C$ . Solve the formula for  $C$ .

**Quiz 13** .....

Evaluate.

1.  $6 + (3 \times 2^3 - 4^2 \div 4^1) \div 5$

Solve. Reduce fractions but leave them improper.

2.  $6x - 4 = 11$

3.  $4(x - 3) + 2x = 3x - 8$

4.  $3|2x + 5| - 7 = 8$

5. Two trains leave a station at the same time and travel in opposite directions. One train travels at 110 mph while the other travels at 120 mph. How long does it take for the two trains to be 920 miles apart?

**Quiz 14** .....

1. Which statement is true?

- A)  $(0, -3)$  is a solution to  $y = x + 3$ .
- B)  $(-4, 2)$  is a solution to  $y = x + 2$ .
- C)  $(2, -1)$  is a solution to  $x + 2y = 0$ .
- D)  $(-1, 0)$  is a solution to  $3x - y = 1$ .

Complete the table of  $x$  and  $y$  values given the equation.

2.  $y = 2x - 3$

$x$	-2	0			6
$y$			1	5	

3.  $3x + 2y = 4$

$x$		-2	0		
$y$	8			-1	-4

Graph by plotting at least three points.

4.  $y = 2x + 1$

				4				
				3				
				2				
				1				
$x$				0				
	-3	-2	-1	0	1	2	3	4
				-1				
				-2				
				-3				
								$y$

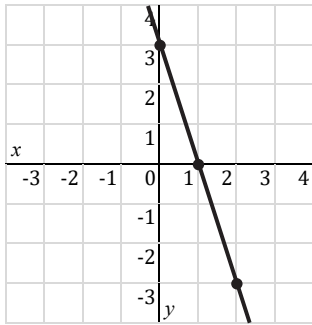
5.  $2x + 3y = 6$

				4				
				3				
				2				
				1				
$x$				0				
	-3	-2	-1	0	1	2	3	4
				-1				
				-2				
				-3				
								$y$

**Quiz 15** .....

Find the slope of the line given its graph or given two points on the line.

1.

2.  $(-2, 2)$  and  $(1, 8)$ 3.  $(3, 10)$  and  $(6, -2)$ 4.  $(2, 4)$  and  $(-8, 0)$ 5.  $(4, 9)$  and  $(-4, 5)$

**Quiz 16** .....

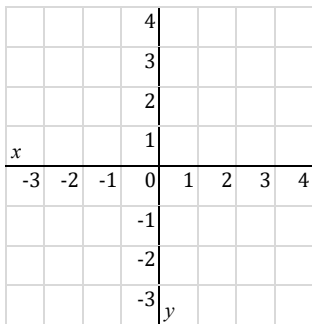
Find the slope and y-intercept.

1.  $y = -x + 5$

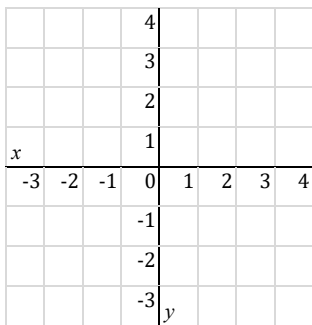
2.  $y = \frac{1}{4}x - 3$

Graph using the slope and y-intercept.

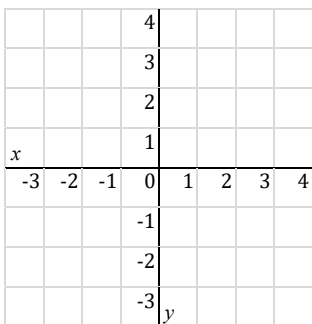
3.  $y = x - 2$



4.  $y = -2x + 3$



5.  $y = \frac{3}{4}x + 1$





**Quiz 17** .....

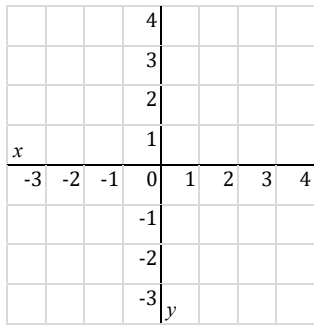
Find the slope and  $y$ -intercept.

1.  $x - y = 5$

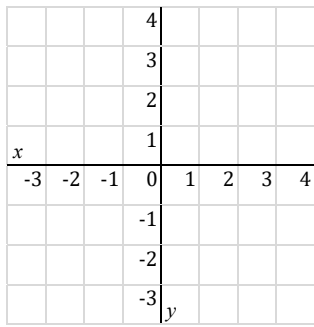
2.  $x + 2y = 8$

Graph using the slope and  $y$ -intercept.

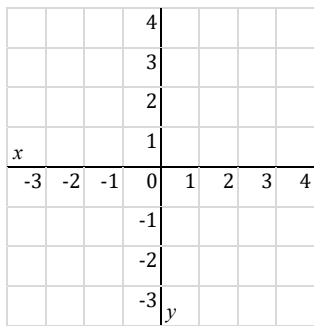
3.  $4x + y = 1$



4.  $x - 3y = 3$



5.  $3x - 2y = -4$



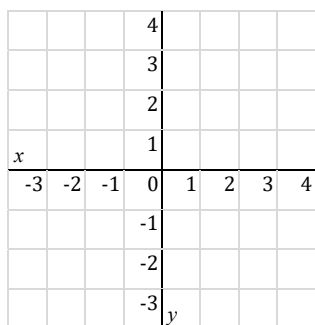
**Quiz 18** .....Find the  $x$ -intercept and  $y$ -intercept.

1.  $x - 2y = 6$

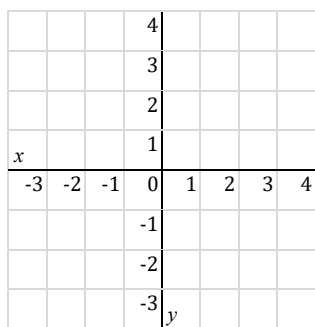
2.  $5x + 3y = 15$

Graph using the  $x$ -intercept and  $y$ -intercept.

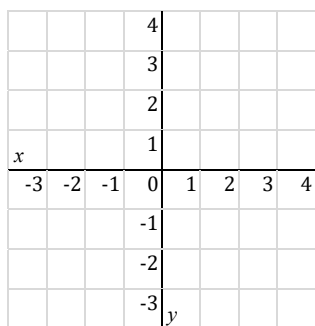
3.  $3x + y = 3$



4.  $2x - 3y = 6$



5.  $4x + 3y = -12$



**Quiz 19** .....

1. Write an equation of a line that is vertical and passes through (3, 4).

2. Write an equation of a line that is horizontal and has a  $y$ -intercept of  $-2$ .

Determine if the lines are parallel, perpendicular, or neither.

3.  $y = 5x + 4$   
 $x + 5y = 2$

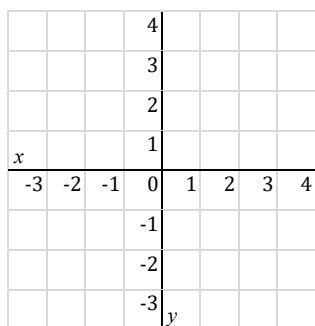
4.  $3x + 4y = 0$   
 $y = -3x + 4$

5.  $2x + 3y = 3$   
 $4x + 6y = -4$

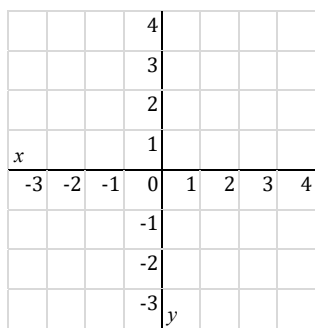
**Quiz 20** .....

Graph by plotting the vertex and two additional points.

1.  $y = |x + 2|$



2.  $y = -|x - 1| + 3$



Find the vertex of the graph, then determine whether the graph opens up or down.

3.  $y = |x| - 5$

4.  $y = -|x + 3|$

5.  $y = |x - 4| + 2$

**Quiz 21** .....

1. Find the slope of a line passing through (3, 7) and (−2, 4).
  
2. Find the slope of a line perpendicular to the line passing through (4, 5) and (−2, 3).
  
3. Write an equation of a line that is parallel to the y-axis and has an x-intercept of 4.

Graph using any method.

4.  $x + 2y = 4$

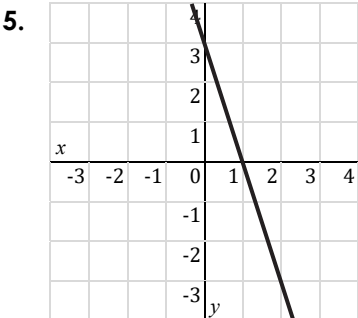
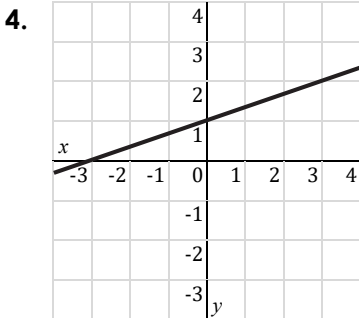
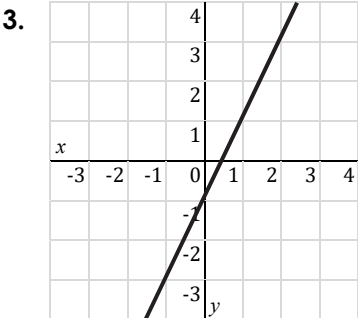
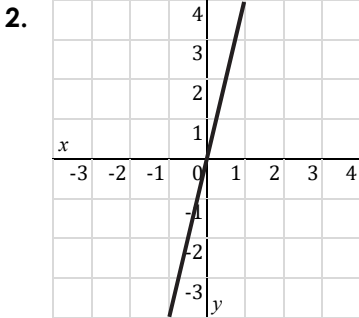
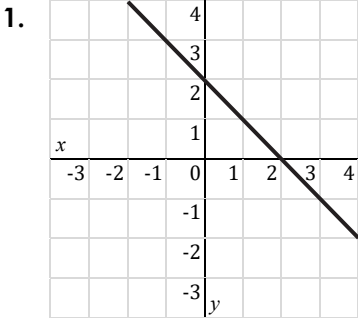
				4					
				3					
				2					
				1					
<i>x</i>				0	1	2	3	4	
				-1					
				-2					
				-3					
				<i>y</i>					

5.  $y = |x + 1| - 3$

				4					
				3					
				2					
				1					
<i>x</i>				0	1	2	3	4	
				-1					
				-2					
				-3					
				<i>y</i>					

**Quiz 22** .....

Find an equation of each line in slope-intercept form.



**Quiz 23** .....

Find an equation of each line in slope-intercept form.

1. A line has a slope of  $-1$  and passes through  $(8, -3)$ .
  
  
  
  
  
  
  
  
  
  
2. A line passes through  $(-2, -6)$  and  $(1, 9)$ .
  
  
  
  
  
  
  
  
  
  
3. A line passes through  $(-5, 3)$  and  $(10, 3)$ .
  
  
  
  
  
  
  
  
  
  
4. A line is parallel to  $2x + y = 0$  and passes through  $(6, -7)$ .
  
  
  
  
  
  
  
  
  
  
5. A line is perpendicular to  $4x - 3y = 6$  and passes through  $(8, -4)$ .

**Quiz 24** .....

Find an equation of each line in point-slope form. Use the first point when given two points.

1. A line has a slope of 4 and passes through  $(2, 7)$ .
  
  
  
  
  
  
  
  
  
  
2. A line passes through  $(-3, -1)$  and  $(-4, 4)$ .
  
  
  
  
  
  
  
  
  
  
3. A line passes through  $(-5, 8)$  and  $(3, 0)$ .
  
  
  
  
  
  
  
  
  
  
4. A line is parallel to  $x - 2y = 6$  and passes through  $(6, -4)$ .
  
  
  
  
  
  
  
  
  
  
5. A line is perpendicular to  $x + 3y = 1$  and passes through  $(-5, -8)$ .



**Quiz 25** .....

Find an equation of each line in standard form. Use only integers and the smallest possible positive integer coefficient for  $x$ .

1. A line has a slope of  $-3$  and passes through  $(-1, 5)$ .
2. A line passes through  $(-6, 3)$  and  $(4, -1)$ .
3. A line passes through  $(7, 0)$  and  $(-5, -2)$ .
4. A line is parallel to  $x = -6$  and passes through  $(3, -4)$ .
5. A line is perpendicular to  $3x + 2y = 4$  and passes through  $(5, 5)$ .

**Quiz 26** .....

Solve.

1. A canoe rental shop charges a \$10 fixed fee plus \$8 per hour for renting a canoe. Write an equation representing the total cost,  $y$ , of renting a canoe for  $x$  hours. How much will it cost to rent a canoe for 4 hours?
2. A plumber charges \$30 for a service call plus \$42 per hour of service. Write an equation representing the total cost,  $y$ , after  $x$  hours of service. How much will it cost for a job that takes 3 hours?
3. An empty water tank is being filled at a rate of 7 gallons per minute. Write an equation representing the amount of water,  $y$ , in the tank after  $x$  minutes. How much water will be in the tank after 15 minutes?
4. Rachel joined a gym that charges a \$50 joining fee plus \$24 per month. She also rented a locker at \$6 per month. Write an equation representing Rachel's total cost,  $y$ , of joining the gym for  $x$  months. How much will she pay for 6 months?
5. A submarine 1,500 feet below the surface of the water begins ascending at an average speed of 60 feet per minute. Write an equation representing the depth,  $y$ , of the submarine after  $x$  minutes. How long will it take the submarine to reach the surface of the water?

**Quiz 27** .....

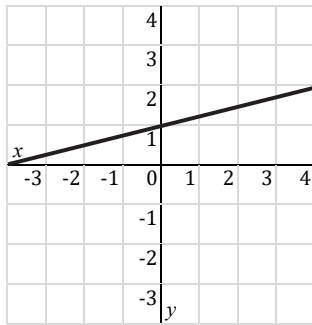
Solve.

1. Hailey has  $x$  five-dollar bills and  $y$  one-dollar bills amounting to \$64. Write an equation relating  $x$  and  $y$ . If she has 9 ones, how many fives does she have?
2. Watermelons cost \$6 each. Mangos cost \$2 each. Sue has \$30 to buy  $x$  watermelons and  $y$  mangos. Write an equation relating  $x$  and  $y$ . If Sue buys 3 watermelons, how many mangos can she buy?
3. A 100-point test has  $x$  questions worth 4 points each and  $y$  questions worth 8 points each. Write an equation relating  $x$  and  $y$ . If there are 11 questions worth 4 points each, how many questions will be worth 8 points each?
4. A group of  $x$  adults and  $y$  children paid a total of \$98 for movie tickets. Adult tickets cost \$12 each and child tickets cost \$10 each. Write an equation relating  $x$  and  $y$ . If they bought 4 adult tickets, how many child tickets did they buy?
5. A restaurant has  $x$  tables that seat 2 people and  $y$  tables that seat 6 people. The restaurant can seat a total of 78 people. Write an equation relating  $x$  and  $y$ . If 15 tables seat 2 people, how many tables seat 6 people?

**Quiz 28** .....

Find an equation of each line in standard form. Use only integers and the smallest possible positive integer coefficient for  $x$ .

1.



2. A line has a slope of  $-3$  and passes through  $(5, -7)$ .

3. A line passes through  $(-2, 3)$  and  $(4, -1)$ .

4. A line is perpendicular to  $x - 2y = 3$  and passes through  $(-6, 5)$ .

Solve.

5. A plane 7,000 feet above the ground begins descending at an average speed of 500 feet per minute. Write an equation representing the altitude,  $y$ , of the plane after  $x$  minutes. How long will it take the plane to reach an altitude of 2,500 feet?

**Quiz 29** .....

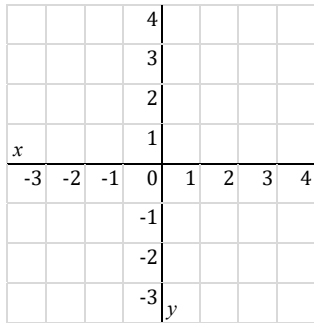
1.  $2x + y = 6$   
 $x - 4y = 12$   
 $3x + 2y = 8$

Which of the following is the solution to the system of equations above?

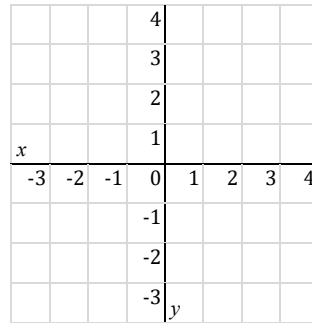
- A) (3, 0)                      B) (8, -1)                      C) (4, -2)                      D) (-2, 7)

Solve by graphing.

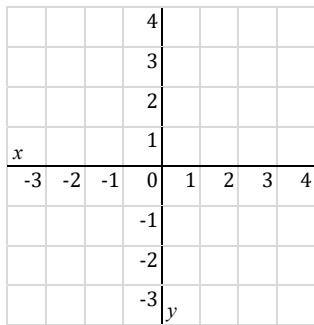
2.  $x = 2$  and  $y = 3x - 4$



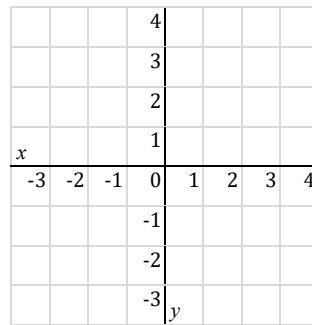
3.  $y = x - 2$  and  $y = -2x + 1$



4.  $5x + y = 3$  and  $2x + 3y = 9$



5.  $x - 3y = 4$  and  $3x + y = -8$



**Quiz 30** .....

Solve by substitution.

1.  $y = 3x + 2$   
 $x + 6y = 12$

2.  $y = 4x - 1$   
 $5x - 4y = -7$

3.  $x + 3y = -9$   
 $3x - 2y = -5$

4.  $x - 2y = 13$   
 $x + 5y = -15$

5.  $6x + 2y = 4$   
 $2x - 3y = 27$

**Quiz 31** .....

Solve by elimination.

1.  $x + 8y = 13$   
 $x - 2y = -7$

2.  $3x - y = 15$   
 $5x + 2y = -8$

3.  $2x + 6y = 0$   
 $3x + 2y = -14$

4.  $3x + 4y = -9$   
 $4x - 3y = 13$

5.  $2x - 5y = -30$   
 $3x + 10y = 25$

**Quiz 32** .....

Solve using any method.

1.  $y = -x + 8$   
 $x - 9y = 8$

2.  $3x + 2y = 14$   
 $5x - 2y = 18$

3.  $4x + 5y = 8$   
 $2x + 7y = -14$

4.  $3x - y = 12$   
 $6x + 5y = 3$

5.  $2x + 7y = 25$   
 $4x - 6y = 30$



**Quiz 33** .....

1. A system of linear equations has no solution if
  - A) the lines have different slopes.
  - B) the lines have different  $y$ -intercepts.
  - C) the lines have the same slope but different  $y$ -intercepts.
  - D) the lines have the same slope and the same  $y$ -intercept.
  
2. Which system of equations has infinitely many solutions?
  - A)  $x + 3y = -1$  and  $2x + 6y = 2$
  - B)  $y = 2x - 5$  and  $4x - 2y = 10$
  - C)  $x + 2y = 4$  and  $4x - y = -2$
  - D)  $y = -3x + 4$  and  $5x + 2y = 8$

Solve using any method.

3.  $y = 2x - 9$   
 $x + 5y = -1$

4.  $5x - y = -7$   
 $9x + 2y = 14$

5.  $4x + 3y = 11$   
 $3x - 2y = 21$

**Quiz 34** .....

1. The sum of the digits of a two-digit number is 10. When the digits are reversed, the number is increased by 18. What is the number?
  
  
  
  
  
  
  
  
  
  
2. Leah has \$3.60 in quarters and dimes. She has eight more dimes than quarters. How many of each type of coin does Leah have?
  
  
  
  
  
  
  
  
  
  
3. The sum of Max and Kate's ages is 32. Seven years ago, Max was twice as old as Kate. How old are they now?
  
  
  
  
  
  
  
  
  
  
4. A restaurant has 20 tables that can seat a total of 92 people. Some tables seat 4 people and the others seat 6 people. How many tables seat 4 people? How many tables seat 6 people?
  
  
  
  
  
  
  
  
  
  
5. Six muffins and three cookies cost \$10.20. Three muffins and a dozen cookies cost \$11.40. How much does a muffin cost, and how much does a cookie cost?

**Quiz 35** .....

1. Lynn took two buses to travel 332 miles. The first bus averaged 64 km/hr. The second bus averaged 70 km/hr. The whole trip took 5 hours. How much time did she spend in each bus?
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
2. An airplane flying with the wind traveled 2,700 miles in 9 hours. The return trip took 10 hours flying against the wind. What was the speed of the plane in still air? What was the speed of the wind?
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
3. A boat takes 4 hours to travel 120 km upstream. The return trip downstream takes only 3 hours. What is the speed of the boat in still water? What is the speed of the current?
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
4. Two trains leave a station at the same time and travel in opposite directions. One train travels 20 mph faster than the other train. After 3 hours, they are 810 miles apart. What is the speed of each train?
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
5. Two airplanes leave airports 1,600 miles apart at the same time and travel toward each other. One plane travels 40 mph faster than the other. If they meet after 2.5 hours, what is the speed of each plane?

**Quiz 36** .....

1. How much water should be added to 180 liters of a 25% saline solution to make an 18% saline solution?
2. A 20% alcohol solution is to be mixed with a 50% alcohol solution to produce 15 gallons of a 40% alcohol solution. How much of each should be used?
3. A chemist wants to make 30 ounces of a 24% acid solution by mixing a 15% acid solution and a 30% acid solution. How much of each should be used?
4. Coffee A costs \$15 per pound. Coffee B costs \$12 per pound. How much of each should be mixed to produce 18 pounds of a coffee blend that costs \$13 per pound?
5. Walnuts sell for \$4.50 a pound. Almonds sells for \$6 a pound. A store wants to make 25 pounds of a mixture to sell for \$5.10 per pound. How much of each should be used?

**Quiz 37** .....

Solve.

1.  $x = -4$

$4x + 7y = 5$

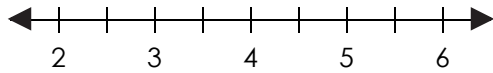
2.  $x + 3y = -1$

$3x - 2y = 19$

3. Movie tickets cost \$12 for adults and \$10 for children. A group bought 9 tickets and paid \$98 in total. How many adults and how many children were in the group?
4. A man in a canoe travels 16 miles downstream in a river in 2 hours. The return trip upstream takes twice as long. Find the average speed of the canoe in still water and the speed of the current.
5. One juice drink is 12% orange juice. Another is 20% pineapple juice. How much of each should be mixed to make 16 ounces of 18% fruit juice?

**Quiz 38** .....

1. Graph  $x > 4$ .



Solve.

2.  $7x - 1 \leq -22$

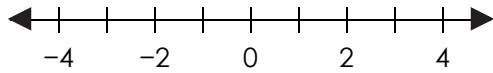
3.  $4(3 - 2x) - 2 > 8$

4.  $\frac{1}{2}x + \frac{3}{4} < x - \frac{1}{2}$

5. The sum of two consecutive integers is at most 35. What is the greatest possible value for the greater integer?

**Quiz 39** .....

1. Graph  $-3 < x \leq 2$ .



Solve.

2.  $-7 \leq 2x + 3 < 11$

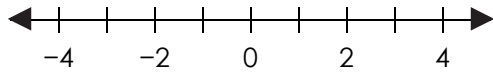
3.  $-4x \geq 16$  and  $3x - 5 < 10$

4.  $x - 5(x + 2) > 6$  or  $2 + 7x < x + 8$

5.  $\frac{3}{10} \leq \frac{1}{2} - \frac{3}{5}x < \frac{4}{5}$

**Quiz 40** .....

1. Graph  $|x| \geq 2$ .



Solve.

2.  $|x + 5| \leq 3$

3.  $|2x - 5| > 7$

4.  $3 + |1 - 2x| \geq 4$

5.  $2|4 - x| - 7 < 5$



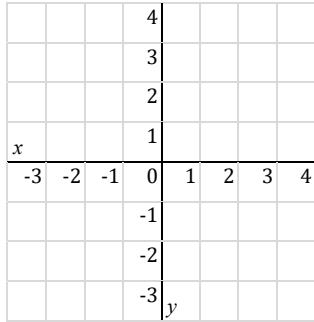
**Quiz 41** .....

1. Which ordered pair is NOT a solution to the inequality  $2x + 3y > -6$  ?

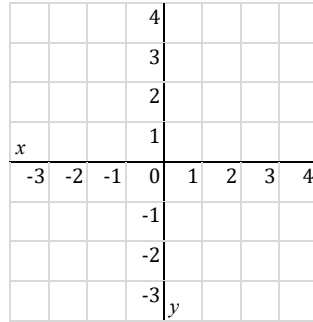
- A) (4, 2)                      B) (-6, 3)                      C) (5, -1)                      D) (3, -4)

Graph.

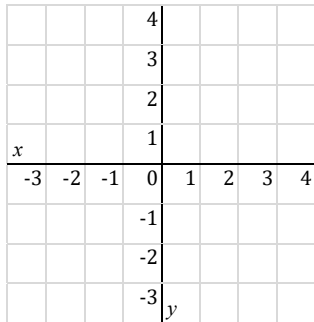
2.  $y > 2x + 1$



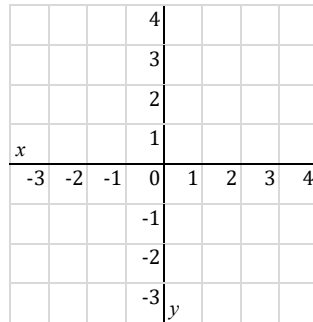
3.  $x \leq -1$



4.  $3x - y > 4$



5.  $4x + 3y > -6$



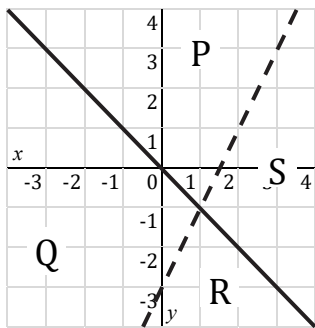
**Quiz 42** .....

1. Which system of inequalities has no solution?

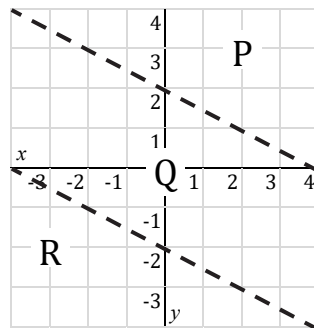
- A)  $y > 1$  and  $x \leq 3$
- B)  $y > 1$  and  $y < -2$
- C)  $x \leq 2$  and  $x > -1$
- D)  $x \leq 3$  and  $x \geq 3$

Which region represents the solution set to the system?

2.  $y \geq -x$  and  $y < 2x - 3$

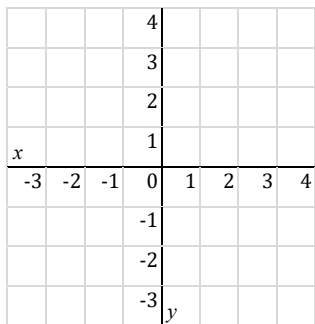


3.  $x + 2y < 4$  and  $x + 2y > -4$

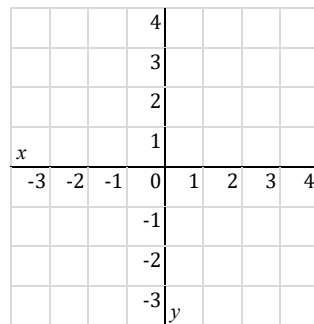


Graph.

4.  $x \geq 1$  and  $y > -3x + 1$



5.  $x + y \leq 2$  and  $x - 4y < 2$



**Quiz 43** .....

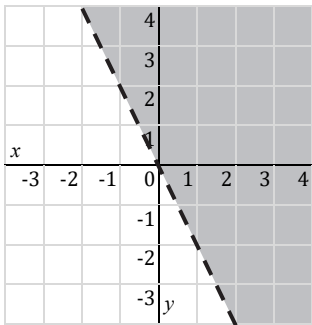
Solve.

1.  $2(x + 3) > x + 4$

2.  $-2 \leq 1 - 3x < 10$

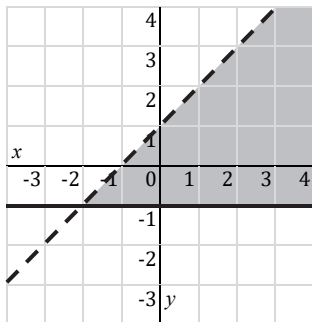
3.  $|5 - 2x| + 3 > 8$

4. Which inequality is graphed below?



- A)  $y < 2x$
- B)  $y > 2x$
- C)  $y < -2x$
- D)  $y > -2x$

5. Which system of inequalities is graphed below?

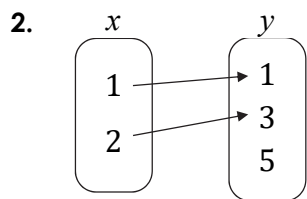


- A)  $x \geq -1$  and  $x + y > -1$
- B)  $x \geq -1$  and  $x + y < -1$
- C)  $y \geq -1$  and  $x + y > -1$
- D)  $y \geq -1$  and  $x + y < -1$

**Quiz 48** .....

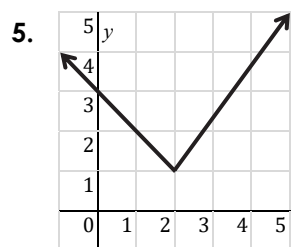
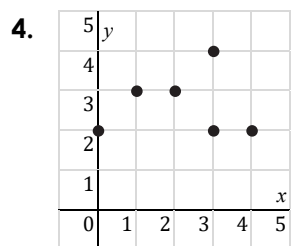
Identify as a function or not a function. Explain.

1.  $\{(0, 1), (1, 1), (3, 0), (5, -4)\}$



3.

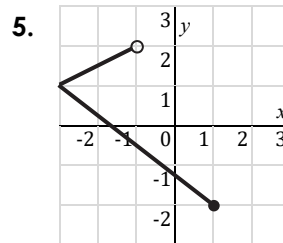
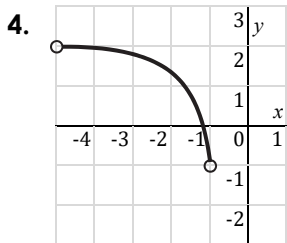
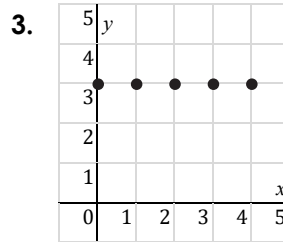
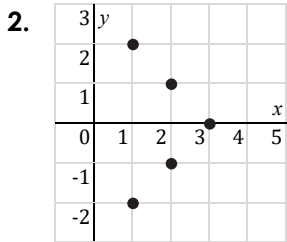
$x$	2	1	0	1	2
$y$	-4	-2	0	2	4



**Quiz 49** .....

- The formula  $S = 180(n - 2)$  gives the sum,  $S$ , of the interior angle measures of a polygon with  $n$  sides. Identify the dependent and independent variables.

Find the domain and range of the relation, then determine if the relation is a function.

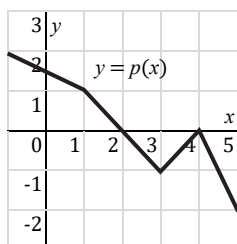


**Quiz 50** .....Find the value(s) of  $n$ .

1.  $f(x) = x^2 - 7; f(-4) = n$

2.  $g(x) = 3x + 5; g(n) = -10$

3.  $h(x) = |x| - 4; h(n) = 8$

Find the value(s) of  $n$  given the graph of  $p$ .

4.  $p(4) - p(1) = n$

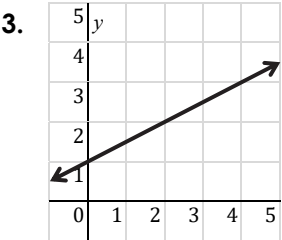
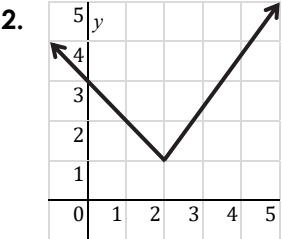
5.  $p(n) = 0$

**Quiz 51** .....

1. Which equation is linear?

- A)  $x = 5$
- B)  $x + y = 5$
- C)  $xy = 5$
- D)  $x^2 + y = 5$

Identify as linear or nonlinear. If linear, write a rule.



4. 

$x$	-4	-2	0	2	4
$y$	0	2	4	6	8

5. 

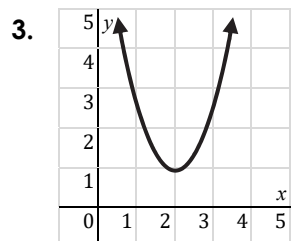
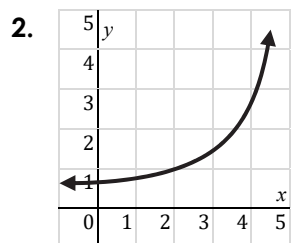
$x$	-2	-1	0	1	2
$y$	4	1	0	1	4

**Quiz 52** .....

1. Which equation is exponential?

- A)  $y = 2^x$
- B)  $xy = 2$
- C)  $y = x^2$
- D)  $x + y = 0$

Classify as linear, exponential, or quadratic.



4. 

$x$	-1	0	1	2	3
$y$	1	3	5	7	9

5. 

$x$	1	2	3	4	5
$y$	2	4	8	16	32



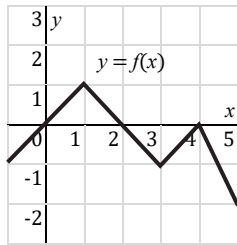
**Quiz 53** .....

Find the average rate of change of  $f$  over the given interval.

1.  $-1 \leq x \leq 2$

$x$	-1	0	1	2	3
$f(x)$	1	3	5	7	9

2.  $0 \leq x \leq 4$

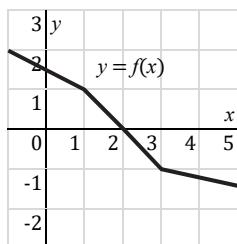


3.  $f(x) = 4x + 7; -3 \leq x \leq 6$

4.  $f(x) = 2^x; 2 \leq x \leq 6$

Solve.

5. A model rocket is launched straight upward with an initial speed of 160 feet per second. Its height  $h$ , in feet, after  $t$  seconds is given by the function  $h(t) = -16t^2 + 160t$ . Find the average rate of change from  $t = 0$  to  $t = 5$ .

**Quiz 54** .....Find the value of  $n$ .

1.  $f^{-1}(1) = n$

2.  $f^{-1}(-1) = n$

Find the inverse of the function.

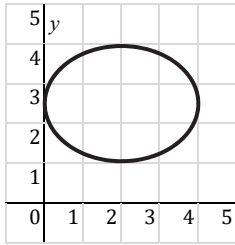
3.  $f(x) = x - 1$

4.  $f(x) = -x + 7$

5.  $f(x) = \frac{1}{2}x + \frac{3}{2}$

**Quiz 55** .....

1. Does the graph represent a function?



2. Is the table linear or nonlinear?

$x$	-4	-2	0	2	4
$y$	2	0	-2	0	2

3. Is the table linear, quadratic, or exponential?

$x$	0	1	2	3	4
$y$	1	4	9	16	25

4. What is the average rate of change of  $f(x) = x^3$  over the interval  $-1 \leq x \leq 2$  ?

5. If  $f(x) = 3x - 6$ , what is  $f^{-1}(x)$ ?

**Quiz 56** .....

1. Which equation represents direct variation?

A)  $y = 5x$

B)  $xy = 5$

C)  $y = 5$

D)  $x + y = 5$

2. Write a direct variation equation if  $y$  varies directly with  $x$  and  $y = 8$  and  $x = 2$ .

3. Suppose  $y$  varies directly with  $x$ , and  $y = -9$  when  $x = 3$ . Find  $y$  when  $x = -5$ .

4. Suppose  $y$  varies directly with  $x$ , and  $y = 1$  when  $x = 5$ . Find  $x$  when  $y = 2$ .

5. The number of words Emma types varies directly with the time she spends typing. Emma types 80 words in 2 minutes. How many words will she type in 5 minutes?

**Quiz 57** .....

1. Which equation represents inverse variation?

A)  $y = 7x$

B)  $xy = 7$

C)  $y = 7$

D)  $x + y = 7$

2. Write an inverse variation equation if  $y$  varies inversely with  $x$  and  $y = 3$  and  $x = 2$ .

3. Suppose  $y$  varies inversely with  $x$ , and  $y = 10$  when  $x = -2$ . Find  $y$  when  $x = 5$ .

4. Suppose  $y$  varies inversely with  $x$ , and  $y = 6$  when  $x = 2$ . Find  $x$  when  $y = 3$ .

5. The time it takes to travel a certain distance varies inversely with the speed traveled. If it takes 20 minutes to drive to work at 60 mph, how long will it take to drive back home at 50 mph?

**Quiz 58** .....

1. Write the next two terms of the arithmetic sequence 3, 5, 7, 9, 11, ...

2. Write the first five terms of the arithmetic sequence with  $a_1 = 5$  and  $d = -3$ .

Write a rule for the arithmetic sequence.

3.  $a_1 = 10$  and  $d = 6$

4. 8, 3, -2, -7, -12, ...

5. 16, 23, 30, 37, 44, ...

**Quiz 59** .....

1. Write the next two terms of the geometric sequence 1, 2, 4, 8, 16, ...

2. Write the first five terms of the geometric sequence with  $a_1 = 2$  and  $r = 3$ .

Write a rule for the geometric sequence.

3.  $a_1 = 3$  and  $r = 2$

4. 2, 10, 50, 250, 1250, ...

5. 1, -3, 9, -27, 81, ...

**Quiz 60** .....

Find the explicit formula.

1. 2, 9, 16, 23, 30, ...

2. 2, 6, 18, 54, 162, ...

Find the recursive formula.

3. 5, 1, -3, -7, -11, ...

4. 5, 10, 20, 40, 80, ...

5. 4, -12, 36, -108, 324, ...



**Quiz 61** .....

Find the 8<sup>th</sup> term.

1. 6, 9, 12, 15, 18, ...

2. 1, 2, 4, 8, 16, ...

Solve. Use a calculator if necessary. Round your answers to the nearest whole number.

3. A tree grows 0.7 feet per year. It was 4 feet tall at the beginning of this year. What will be the height of the tree at the beginning of the 6th year?

4. As a car gets older, its resale value goes down by 20% each year. Kyle bought a new car for \$22,000. What will be the value of the car after 5 years?

5. Ed started a job that paid \$68,000 a year. Each year after the first, he received a raise of \$1,200. What was Ed's salary in his 9th year of employment?



**Quiz 63** .....

Evaluate.

1.  $\sqrt{36}$

2.  $\sqrt[3]{-64}$

3.  $\sqrt[4]{81}$

4.  $\sqrt{144} + \sqrt{16} \times \sqrt[3]{-8}$

5.  $(\sqrt{25} + \sqrt[3]{27} + \sqrt[5]{32}) \times \sqrt{0.04}$

**Quiz 64** .....

Simplify.

1.  $\sqrt{50}$

2.  $\sqrt{27}$

3.  $3\sqrt{20}$

4.  $2\sqrt{112}$

5.  $\sqrt{\frac{24}{121}}$

**Quiz 65** .....

Simplify. Assume that all variables are positive.

1.  $\sqrt{x^2y^2}$

2.  $\sqrt{45x^3}$

3.  $2\sqrt{63x^4y}$

4.  $-3\sqrt{18x^2y^5}$

5.  $\sqrt{\frac{9}{x^6y^2z^4}}$

**Quiz 66** .....

Simplify.

1.  $4\sqrt{3} - \sqrt{5} + \sqrt{3} + 2\sqrt{5}$

2.  $3\sqrt{6} - \sqrt{24}$

3.  $\sqrt{32} + \sqrt{18}$

4.  $\sqrt{25} - \sqrt{98} + 3\sqrt{32}$

5.  $\sqrt{75} + 2\sqrt{45} - 4\sqrt{27} - \sqrt{80}$

**Quiz 67** .....

Simplify. Rationalize all denominators. Assume that all variables are positive.

1.  $\sqrt{2} \cdot \sqrt{6}$

2.  $\sqrt{8x} \cdot \sqrt{5x}$

3.  $\sqrt{3x^3y} \cdot \sqrt{12xy}$

4.  $\frac{3}{\sqrt{7}}$

5.  $\frac{\sqrt{54x^3}}{\sqrt{2x}}$

**Quiz 68** .....

Solve. Check for extraneous solutions.

1.  $\sqrt{x} + 2 = 6$

2.  $\sqrt{2x - 3} = 1$

3.  $2\sqrt{x + 1} = \sqrt{3x + 4}$

4.  $\sqrt{5x - 1} = \sqrt{x - 9}$

5.  $\sqrt[3]{x + 9} + 4 = 2$





**Quiz 70** .....

Simplify.

1.  $\sqrt{9} - \sqrt[4]{16} \times \sqrt[5]{-32} - \sqrt[3]{-1}$

2.  $\sqrt{27x^5y^2}$

3.  $\frac{4}{\sqrt{2}} + \sqrt{5} \cdot \sqrt{10}$

Solve.

4.  $\sqrt{x+3} = \sqrt{2x-7}$

5. The area of a square is
- $36 \text{ cm}^2$
- . What is the length of the diagonal of the square in simplest radical form?

**Quiz 71** .....

Evaluate. Write your answers without exponents.

1.  $3^{-2}$

2.  $(-4)^0$

3.  $5^{-3} \cdot 5^5$

4.  $2^{-1} \cdot 6^3 \cdot 6^{-2}$

5.  $10^5 \cdot 2^{-3} \cdot (-5)^{-4}$

**Quiz 72** .....

Simplify. Write your answers with positive exponents.

1.  $4x^3x^2$

2.  $3x^5 \cdot 2x^{-4}$

3.  $x^2 \cdot 5x^{-5} \cdot 4x$

4.  $\frac{x^5x^{-1}}{x^2}$

5.  $\frac{x^3 \cdot 8x^{-4}}{-2x^2}$

**Quiz 73** .....

Simplify. Write your answers with positive exponents.

1.  $(2x^2)^5$

2.  $(-3x^{-3})^2$

3.  $(4x^{-4})^{-3}$

4.  $\left(\frac{-2}{x}\right)^3$

5.  $\left(\frac{3}{x^2}\right)^{-2}$

**Quiz 74** .....

Simplify. Write your answers with positive exponents.

1.  $x^0 \cdot (2x^2)^3$

2.  $9x \cdot (-3x^5)^{-2}$

3.  $(-6x^3)^2 \cdot (2x^{-3})^{-2}$

4.  $\left(\frac{3x^4x^{-2}}{x^{-1}x^5}\right)^3$

5.  $\frac{(-4x^2x^5)^3}{(8x^0x^7)^2}$

**Quiz 75** .....

Convert between scientific notation and standard form.

1. 240,000,000

2. 0.0000005

3.  $4.9 \times 10^{-4}$

Simplify. Write your answers in scientific notation.

4.  $(5 \times 10^5)(7 \times 10^7)$

5.  $\frac{1.5 \times 10^5}{6 \times 10^8}$

**Quiz 76** .....

Convert between exponential form and radical form.

1.  $\sqrt[3]{x^2}$

2.  $x^{5/4}$

Evaluate. Write your answers without exponents. Do not use a calculator.

3.  $9^{1/2}$

4.  $16^{5/4}$

5.  $1000^{-2/3}$



**Quiz 77** .....

Simplify. Write your answers in exponential form with positive exponents.

1.  $x^{1/2} \cdot x^{2/3}$

2.  $(8x^{1/4})^{4/3}$

3.  $\left(\frac{27x^{5/4}}{x^{1/2}}\right)^{2/3}$

Simplify. Write your answers in radical form.

4.  $\sqrt{x} \cdot \sqrt[3]{x}$

5.  $\frac{\sqrt[6]{x^5}}{\sqrt[3]{x}}$

**Quiz 78** .....

1. Which function models exponential growth?

- A)  $y = 4x^2$                       B)  $y = 3(4)^x$   
 C)  $y = 2(0.9)^x$                 D)  $y = 5(1/4)^x$

2. Which function models exponential decay?

- A)  $y = x^{-3}$                       B)  $y = 0.1(2)^x$   
 C)  $y = 0.3^x$                       D)  $y = 3(1.4)^x$

3.  $y = 4\left(\frac{1}{5}\right)^x$

What is the shape of the graph of the function above?

- A)       B)       C)       D) 

Solve. Use a calculator if necessary. Round your answers to the nearest hundredth.

4. A pound of beef costs \$6, and its price is increasing at a rate of 3% per year. How much will a pound of beef cost after 5 years?

5. A new car costs \$18,000 and depreciates (decreases in value) at a rate of 15% per year. How much will the car be worth after 10 years?

**Quiz 79** .....

Evaluate. Write your answers without exponents. Do not use a calculator.

1.  $6^3 \cdot 3^{-2}$

2.  $64^{2/3}$

Simplify. Write your answers in exponential form with positive exponents.

3.  $4x^5 \cdot 3x^0 \cdot (6x^2)^{-1}$

4.  $(1000x^{3/4})^{1/3}$

Simplify. Write your answers in scientific notation.

5.  $(5 \times 10^4)(6 \times 10^3)$

**Quiz 80** .....

1. Which of the following is NOT a polynomial?

A) 8

B)  $x + x^{-2}$

C)  $x^2y^2 + 5$

D)  $x^2 + 3x - 5$

2.  $3x^4 - 5x^2 + x - 6$

What is the degree and leading coefficient of the polynomial above?

Simplify. Write your answers in standard form.

3.  $(2x + 7) - (4x - 2)$

4.  $(-3x + 5) + (7x + x^2 - 5)$

5.  $(x^3 + 4x + 9 - 2x^2) - (2 - 3x + x^2)$

**Quiz 81** .....

Simplify. Write your answers in standard form.

1.  $(-2x^4)(-5x^2)$

2.  $3x^2(x^2 - 2x + 3)$

3.  $(x + 4)(x + 3)$

4.  $(x - 2)(5x + 1)$

5.  $(2x + 1)(2x - 1)$

**Quiz 82** .....

Simplify. Write your answers in standard form.

1.  $(2x - 1)(x + 3)$

2.  $(x + 4)(x^2 + 2x - 5)$

3.  $(3x^2 - x + 4)(x + 2)$

4.  $(x^2 + 2x - 3)(x^2 - x + 1)$

5.  $(x + 2)(x - 1)(4x + 1)$

**Quiz 83** .....

Simplify. Write your answers in standard form.

1.  $(x + 3)^2$

2.  $(3x - 2)^2$

3.  $(2x + 5)(2x - 5)$

Use special product patterns to find the product. Do not use a calculator.

4.  $43^2$

5.  $28 \times 32$

**Quiz 84** .....

Simplify. Write your answers in standard form.

1.  $(x + 2)(x - 3)$

2.  $(x - 3)^2$

3.  $(3x + 4)(3x - 4)$

4.  $(2x + 5)^2$

5.  $(x - 4)(4x + 3)$



**Quiz 85** .....

Simplify. Write your answers in standard form.

1.  $(25x^4) \div (-5x^3)$

2.  $(6x^3 - 12x^2 + 9x) \div (3x)$

3.  $(x^2 - 5x + 6) \div (x - 3)$

4.  $(3x^2 - 11x - 4) \div (3x + 1)$

5.  $(8x^2 + 6x - 5) \div (2x - 1)$

**Quiz 86** .....

Simplify. Write your answers in standard form.

1.  $(x^2 + 4x + 5) \div (x + 2)$

2.  $(x^2 - 5x + 4) \div (x - 3)$

3.  $(9x^2 - 6x + 4) \div (3x - 1)$

4.  $(4x^2 + 1) \div (2x + 3)$

5.  $(9x^2 - 5) \div (3x + 1)$

**Quiz 87** .....

Simplify. Write your answers in standard form.

1.  $(5x^2 - 2x + 3) - (3x^2 + x - 1)$

2.  $(x + 3)(2x - 1)$

3.  $(x - 2)^2$

4.  $(2x^2 - 9x - 5) \div (x - 5)$

5.  $(x^2 - 8x + 9) \div (x - 6)$

**Quiz 93** .....

Factor out the GCF.

1.  $3x - 9$

2.  $12x^2 + 16x$

3.  $7x^2y^2 - 2x^2y$

4.  $15x^5 + 12x^3 - 9x^2$

5.  $x^3y^3 + 6x^2y^2 - 10xy$

**Quiz 94** .....

Factor by grouping.

1.  $x^3 - 3x^2 + 2x - 6$

2.  $2x^3 + 8x^2 + 3x + 12$

3.  $6x^5 - 10x^3 - 3x^2 + 5$

Factor out the GCF first, then factor by grouping.

4.  $2x^3 + 2x^2 + 6x + 6$

5.  $5x^5 - x^4 - 10x^3 + 2x^2$

**Quiz 95** .....

Factor.

1.  $x^2 + 5x + 6$

2.  $x^2 - 4x + 3$

3.  $x^2 + 2x - 8$

4.  $x^2 + 7x + 10$

5.  $x^2 + 3x - 28$

**Quiz 96** .....

Factor.

1.  $x^2 + 10x + 24$

2.  $x^2 - 6x - 16$

Factor out the GCF first, then factor further.

3.  $2x^2 - 4x - 30$

4.  $4x^2 + 20x - 24$

5.  $3x^2 - 27x + 42$

**Quiz 97** .....

Factor.

1.  $2x^2 + 3x + 1$

2.  $8x^2 - 14x + 3$

3.  $3x^2 - 10x - 8$

4.  $5x^2 + 12x - 9$

5.  $9x^2 - 24x + 16$



**Quiz 98** .....

Factor.

1.  $6x^2 - 5x - 6$

2.  $3x^2 - 11x - 4$

3.  $4x^2 + 16x + 7$

4.  $5x^2 + 19x + 12$

5.  $12x^2 - 17x - 5$

**Quiz 99** .....

Factor.

1.  $x^2 + 6x + 9$

2.  $x^2 - 36$

3.  $x^2 - 14x + 49$

4.  $9x^2 - 4$

5.  $4x^2 + 20x + 25$

**Quiz 100** .....

Factor completely.

1.  $x^2 + 5x - 14$

2.  $2x^2 - 3x - 9$

3.  $5x^2 - 10x + 5$

4.  $-4x^2 + 49$

5.  $-3x^2 + 6x + 45$

**Quiz 101** .....

Factor completely.

1.  $-6x^2 - 9x + 60$

2.  $x^4 - 16$

3.  $20x^2 + 11x - 3$

4.  $5x^3 + 20x^2 + 20x$

5.  $2x^3 + 4x^2 - 32x - 64$

**Quiz 102** .....

Factor completely.

1.  $x^2 + 7x + 10$

2.  $12x^2 - 5x - 3$

3.  $-2x^3 + 50x$

4.  $4x^3 + x^2 - 16x - 4$

5.  $9x^4 + 6x^3 + x^2$

**Quiz 103** .....

Solve by taking square roots. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $x^2 = 75$

2.  $3x^2 = 48$

3.  $x^2 - 24 = 0$

4.  $4x^2 - 121 = 0$

5.  $32 - 3x^2 = 17$

**Quiz 104** .....

Solve by taking square roots. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $5x^2 - 100 = 0$

2.  $(x + 2)^2 = 81$

3.  $(x - 5)^2 - 5 = 49$

4.  $9(x - 1)^2 = 36$

5.  $3(x + 4)^2 - 13 = 20$

**Quiz 105** .....

Solve by factoring. Reduce fractions but leave them improper.

1.  $x^2 + 7x + 10 = 0$

2.  $x^2 - 25 = 0$

3.  $x^2 - 24 = 2x$

4.  $x^2 + 4x = 45$

5.  $x^2 + 5x = 6x + 6$



**Quiz 106** .....

Solve by factoring. Reduce fractions but leave them improper.

1.  $4x^2 + x - 3 = 0$

2.  $9x^2 - 4 = 0$

3.  $2x^2 + 18 = 12x$

4.  $x^2 + 4x + 4 = 9$

5.  $2x^2 - 2x + 5 = x^2 + 5x - 7$

**Quiz 107** .....

Solve by completing the square. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $x^2 + 2x = 2$

2.  $x^2 - 6x = 3$

3.  $x^2 + 10x + 5 = 0$

4.  $x^2 - 4x + 1 = 0$

5.  $x^2 + 7x = 5x + 3$

**Quiz 108** .....

Solve by completing the square. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $x^2 + 4x = 1$

2.  $3x^2 + 4x = 4$

3.  $2x^2 + 12x - 10 = 0$

4.  $5x^2 - 6x - 11 = 0$

5.  $4x^2 = x^2 + 12x - 3$

**Quiz 109** .....

Solve by the quadratic formula. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $x^2 - 8 = 0$

2.  $x^2 + 4x + 3 = 0$

3.  $2x^2 - 7x + 4 = 0$

4.  $5x^2 + 2x - 1 = 0$

5.  $9x^2 - 12x + 4 = 0$

**Quiz 110** .....

Solve by the quadratic formula. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $4x^2 - 8x + 3 = 0$

2.  $6x^2 - 54 = 0$

3.  $x^2 - 5x = 3x - 5$

4.  $5x^2 + 11x = x - 4$

5.  $3x^2 - 7x = x^2 - 2$

**Quiz 111** .....

Solve using any method. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $(x - 3)^2 - 25 = 0$

2.  $x^2 + 3x - 10 = 0$

3.  $2x^2 + 4x - 8 = 0$

4.  $x^2 + 5x + 3 = 0$

5.  $3x^2 + 6x + 2 = 0$

**Quiz 112** .....

Find the discriminant and state the number of solutions.

1.  $x^2 - 6x + 9 = 0$

2.  $x^2 - 5x + 7 = 0$

3.  $2x^2 + 5x - 2 = 0$

Solve using any method. Leave your answers as improper fractions or radicals in simplest form, if applicable.

4.  $x^2 - 8x + 5 = 0$

5.  $2x^2 - 7x - 4 = 0$





**Quiz 114** .....

Solve using any method. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $2(x + 4)^2 - 16 = 0$

2.  $x^2 + 10x + 24 = 0$

3.  $5x^2 - 20x + 20 = 0$

4.  $2x^2 + x - 2 = 0$

5. One leg of a right triangle is 4 cm longer than the shorter leg and 4 cm shorter than the hypotenuse. Find the dimensions of the triangle.

**Quiz 115** .....

Graph by plotting the points for the given  $x$ -values.

1.  $y = x^2 - 1$  for  $x = -2, -1, 0, 1, 2$

				4				
				3				
				2				
				1				
$x$				0	1	2	3	4
	-3	-2	-1					
				-1				
				-2				
				-3				
				$y$				

2.  $y = -x^2 + 3$  for  $x = -2, -1, 0, 1, 2$

				4				
				3				
				2				
				1				
$x$				0	1	2	3	4
	-3	-2	-1					
				-1				
				-2				
				-3				
				$y$				

3.  $y = x^2 - 2x$  for  $x = -1, 0, 1, 2, 3$

				4				
				3				
				2				
				1				
$x$				0	1	2	3	4
	-3	-2	-1					
				-1				
				-2				
				-3				
				$y$				

4.  $y = \frac{1}{4}x^2 - 2$  for  $x = -4, -2, 0, 2, 4$

				4				
				3				
				2				
				1				
$x$				0	1	2	3	4
	-3	-2	-1					
				-1				
				-2				
				-3				
				$y$				

5.  $y = -2x^2 + 4x + 2$  for  $x = -1, 0, 1, 2, 3$

				4				
				3				
				2				
				1				
$x$				0	1	2	3	4
	-3	-2	-1					
				-1				
				-2				
				-3				
				$y$				

**Quiz 116** .....

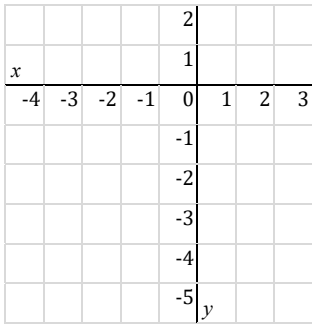
Find the vertex.

1.  $y = x^2 + 8x + 9$

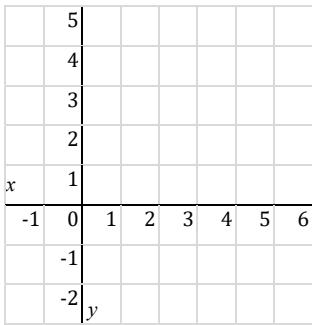
2.  $y = -x^2 + 6x - 1$

Graph by plotting the vertex and two additional points on each side of the vertex. Use the  $y$ -intercept when possible.

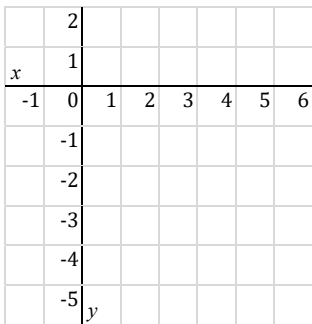
3.  $y = x^2 + 2x - 3$



4.  $y = x^2 - 4x + 4$



5.  $y = -\frac{1}{2}x^2 + 2x$



**Quiz 117** .....

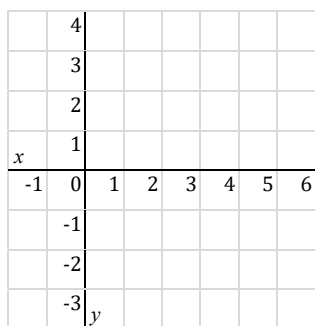
Find the vertex.

1.  $y = 4(x - 5)^2 + 3$

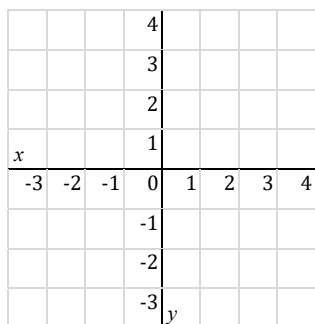
2.  $y = -(x + 2)^2 - 9$

Graph by plotting the vertex and one additional point on each side of the vertex. Use the  $y$ -intercept when possible.

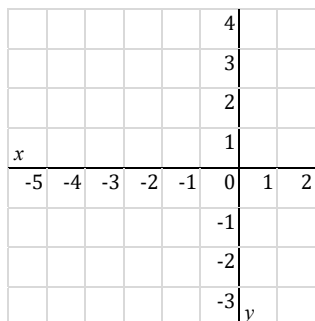
3.  $y = (x - 2)^2 - 3$



4.  $y = -4(x + 1)^2 + 2$



5.  $y = \frac{1}{4}(x + 2)^2 - 1$



**Quiz 118** .....

Find the vertex.

1.  $y = (x + 3)(x - 3)$

2.  $y = -\frac{2}{3}(x - 3)(x - 9)$

Graph by plotting the vertex and x-intercepts.

3.  $y = -(x - 1)(x - 3)$

	3						
	2						
x	1						
-1	0	1	2	3	4	5	6
	-1						
	-2						
	-3						
	-4						
	y						

4.  $y = \frac{1}{2}x(x + 4)$

						4	
						3	
						2	
x						1	
-5	-4	-3	-2	-1	0	1	2
						-1	
						-2	
						-3	
						y	

5.  $y = 2(x + 1)(x - 1)$

						4	
						3	
						2	
x						1	
-3	-2	-1	0	1	2	3	4
						-1	
						-2	
						-3	
						y	

**Quiz 119** .....

Convert to vertex form.

1.  $y = x^2 + 6x + 5$

2.  $y = -2x^2 + 8x - 1$

Convert to intercept form.

3.  $y = x^2 - 2x - 8$

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

Graph.

5.  $y = x^2 - 2x - 3$

				2					
				1					
<i>x</i>									
	-3	-2	-1	0	1	2	3	4	
				-1					
				-2					
				-3					
				-4					
				-5					
				<i>y</i>					

**Quiz 120** .....

Find the vertex, y-intercept, and x-intercepts (if any).

1.  $y = -4(x - 1)^2$

2.  $y = \frac{1}{3}(x + 1)(x - 5)$

3.  $y = -x^2 - 4x + 5$

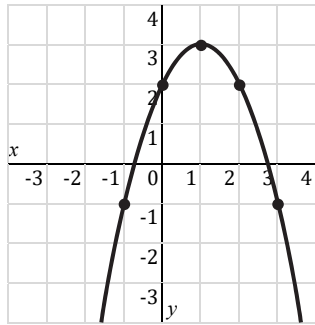
4.  $y = 2x^2 - 8$

5.  $y = -x^2 + 6x - 5$

**Quiz 121** .....

Find an equation of each parabola in standard form.

1.



2. A parabola has a vertex at  $(5, 3)$  and passes through  $(2, -6)$ .
  
  
  
  
  
  
  
  
  
  
3. A parabola has a vertex at  $(-3, 0)$  and passes through  $(-1, 8)$ .
  
  
  
  
  
  
  
  
  
  
4. A parabola has zeros at  $-2$  and  $1$  and passes through the point  $(0, -6)$ .
  
  
  
  
  
  
  
  
  
  
5. A parabola has zeros at  $0$  and  $8$  and passes through the point  $(-2, 5)$ .



**Quiz 122** .....

Find an equation of each transformed parabola in vertex form.

1. The parabola  $y = x^2$  is shifted right 3 units.
  
  
  
  
  
  
  
  
  
  
2. The parabola  $y = x^2$  is flipped over the  $x$ -axis and shifted up 2 units.
  
  
  
  
  
  
  
  
  
  
3. The parabola  $y = x^2$  is shifted left 2 units and down 5 units.
  
  
  
  
  
  
  
  
  
  
4. The parabola  $y = x^2$  is scaled by 3 and shifted right 4 units and up 2 units.
  
  
  
  
  
  
  
  
  
  
5. The parabola  $y = x^2$  is scaled by 2, flipped over the  $x$ -axis, and shifted left 1 unit.

**Quiz 123** .....

1.  $h(t) = -16t^2 + 128t$

A ball is shot vertically upward from ground level with an initial speed of 128 feet per second. The function above models its height  $h$ , in feet, after  $t$  seconds. When does the ball reach its maximum height?

2.  $h(t) = -16t^2 + 144$

A ball is dropped from a height of 144 feet. The function above models its height  $h$ , in feet, after  $t$  seconds. When will the ball hit the ground?

3.  $h(t) = -16t^2 + 64t + 80$

A ball is thrown straight up from a height of 80 feet with an initial speed of 64 feet per second. The function above models its height  $h$ , in feet, after  $t$  seconds. When will the ball be at a height of 80 feet again?

4.  $h(t) = -16t^2 + 32t + 240$

A ball is thrown straight up from a height of 240 feet with an initial speed of 32 feet per second. The function above models its height  $h$ , in feet, after  $t$  seconds. What is the maximum height reached by the ball?

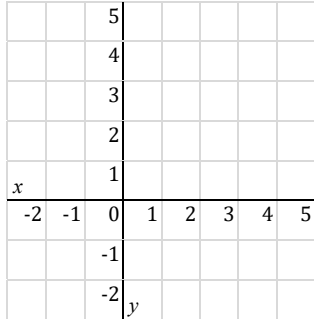
5.  $c(x) = 0.2x^2 - 8x + 90$

The cost for producing a certain part is modeled by the function above, where  $x$  is the number of parts produced a day. For what number of parts is the cost minimized? (*Hint*: Find the  $x$ -value of the vertex of the parabola.)

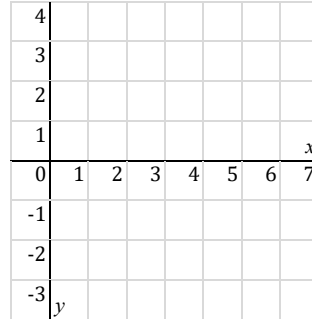
**Quiz 124** .....

Convert to vertex form, then graph.

1.  $y = x^2 - 2x + 2$



2.  $y = -\frac{1}{2}x^2 + 4x - 6$



3. A parabola has zeros at 2 and 6 and passes through the point (7, -5). What is the vertex of the parabola?

4. The parabola  $y = x^2$  is scaled by 3, flipped over the  $x$ -axis, and shifted 4 units up. Find an equation of the transformed parabola in vertex form.

5.  $h(t) = -16t^2 + 96t + 256$

A ball is thrown straight up from a height of 256 feet with an initial speed of 96 feet per second. The function above models its height  $h$ , in feet, after  $t$  seconds. When does the ball reach its maximum height?

**Quiz 125** .....

Simplify. State any excluded values.

1. 
$$\frac{5x^3}{35x^2}$$

2. 
$$\frac{x^2 - 4}{x^2 + 2x}$$

3. 
$$\frac{x + 7}{x^2 + 5x - 14}$$

4. 
$$\frac{x^2 - 6x + 9}{2x^2 - 5x - 3}$$

5. 
$$\frac{x^3 + 5x^2 + 4x}{x^3 + 4x^2 - x - 4}$$

**Quiz 126** .....

Simplify. State any excluded values.

1.  $\frac{7}{2x^2} \cdot \frac{4x}{21}$

2.  $\frac{x^2 + 3x}{x + 5} \div \frac{x + 3}{2x + 10}$

3.  $\frac{x^2 - 4x + 4}{3x^2 - 6x} \cdot \frac{x^2}{x - 2}$

4.  $\frac{x^2 + 2x - 15}{2x^2 + 3x} \cdot \frac{2x + 3}{x + 5}$

5.  $\frac{2x^2 - 3x - 20}{4x^3 - 25x} \div \frac{x^2 - 4x}{x^2}$

**Quiz 127** .....

Simplify. State any excluded values.

1. 
$$\frac{x^2 + 9}{x + 3} + \frac{6x}{x + 3}$$

2. 
$$\frac{x + 2}{x} - \frac{x + 5}{x + 3}$$

3. 
$$\frac{x}{x^2 - 4} - \frac{2}{x^2 - 4}$$

4. 
$$\frac{x + 2}{x - 3} - \frac{x - 2}{x^2 - 5x + 6}$$

5. 
$$\frac{3x + 9}{2x^2 + 7x + 3} + \frac{x}{2x + 1}$$

**Quiz 128** .....

Solve. Check for extraneous solutions.

1. 
$$\frac{1}{2} - \frac{3}{x} = \frac{1}{2x}$$

2. 
$$\frac{2}{x+4} = \frac{3}{x+5}$$

3. 
$$\frac{x}{x+4} - \frac{1}{x} = \frac{1}{x}$$

4. 
$$\frac{x}{x+3} = \frac{1}{x} - \frac{3}{x+3}$$

5. 
$$\frac{3}{x} - \frac{1}{x+2} = \frac{x-2}{x^2+2x}$$

**Quiz 129** .....

Solve. Check for extraneous solutions.

1. 
$$\frac{x}{4} + \frac{3}{x} = \frac{x+2}{x}$$

2. 
$$\frac{1}{3x} - \frac{x+1}{2x^2} = \frac{x-4}{x^2}$$

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

4. 
$$\frac{x}{3x-1} + \frac{1}{x-1} = \frac{1}{3x-1}$$

5. 
$$\frac{x}{x-2} - \frac{2}{x+3} = \frac{10}{x^2+x-6}$$



**Quiz 130** .....

1. Pipe A can drain a pool in 3 hours. Pipe B can drain the pool in 6 hours. How long will it take to drain the pool when both pipes are used?
2. Lucas can mow the lawn by himself in 20 minutes. William can mow the lawn in 30 minutes. How long will it take to mow the lawn if they work together?
3. Mark and James can paint a fence together in 3 hours. James alone can paint the fence in 5 hours. How long will it take Mark to paint the fence alone?
4. Sam can complete a certain task in 2 hours. Ella can do it in 3 hours, and Adam can do it in 6 hours. How long will it take to complete the task if they work together?
5. Pipe A can fill a pool four times faster than pipe B. When both pipes are open, they fill the pool in 4 hours. How long will it take pipe A to fill the pool alone?

**Quiz 131** .....

Simplify. State any excluded values.

1. 
$$\frac{x^3 + 3x^2 - 10x}{x^3 + 5x^2 - 4x - 20}$$

2. 
$$\frac{x^2 - 4x - 12}{3x + 4} \div \frac{x + 2}{3x^2 + 4x}$$

3. 
$$\frac{x^2 - 11}{x^2 - 3x - 10} - \frac{2}{x - 5}$$

Solve. Check for extraneous solutions.

4. 
$$\frac{1}{x} - \frac{x}{x + 4} = \frac{4}{x^2 + 4x}$$

5. Machine A can do a certain job in 9 hours. Machine B can do the same job in 6 hours. How long will it take to do the job if both machines are used?

**Quiz 138** .....

Find the mean, median, and mode. Use a calculator if necessary.

1. 3, 5, 9, 3, 6, 2, 7

2. 2, 8, 3, 6, 9, 7, 9, 4

3. 30, 15, 20, 15, 18, 10

Find the value of  $x$ .

4. 4, 5, 9,  $x$ , 2, 8; mean = 6

5. 3,  $x$ , 6, 2, 7, 3, 9; mean = 5

**Quiz 139** .....

Find the range and standard deviation. Use a calculator if necessary. Round your answers to the nearest tenth.

1. 3, 3, 2, 8

2. 7, 4, 5, 5, 4

3. 3, 3, 3, 3, 3, 3

4. 2, 5, 1, 6, 4, 7, 3

5. 4, 5, 4, 3, 6, 8

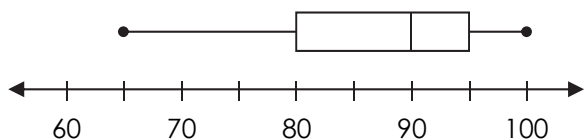
**Quiz 140** .....

Find the five-number summary.

1. 8, 3, 4, 9, 2, 8

2. 2, 7, 4, 8, 4, 6, 6, 4

The box-and-whisker plot shows the scores of a class on an algebra test. Answer the questions.



3. What is the median score?

4. What is the range of the scores?

5. What percentage of the class scored between 80 and 90?

**Quiz 141** .....

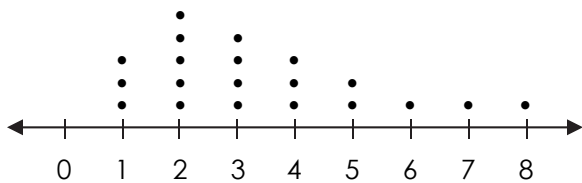
1. Find the median in the stem-and-leaf plot.

Stem	Leaf
0	7, 9
1	0, 0, 5, 7, 8
2	3, 3, 7, 9

2. The frequency table shows the favorite crayon color names from a survey of children. How many children were surveyed?

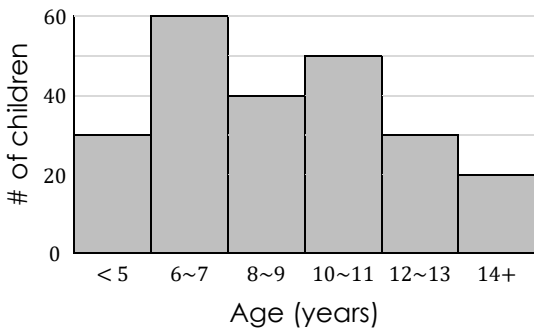
Color name	Frequency
Pink Flamingo	7
Inchworm	9
Outer Space	4

3. The dot plot shows the number of goals a soccer team scored at each game this season. During how many games did the team score 5 or more goals?



4. In the dot plot above, what is the median number of goals scored by the team?

5. The histogram shows the ages of children who visited a city fair on a certain day. How many children visited the fair?



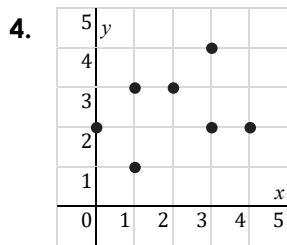
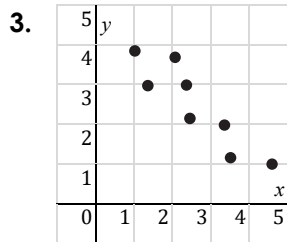


**Quiz 143** .....

Identify the type of correlation.

1. Height and weight of a large group of people

2. Temperature and elevation



5. Which equation best describes the line of best fit for the first plot above?

- A)  $y = x$
- B)  $y = x + 5$
- C)  $y = -x$
- D)  $y = -x + 5$



**Quiz 144** .....

A restaurant surveyed its customers about their preference. Answer the questions.

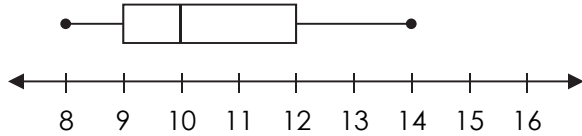
	Steak	Pasta
Soup	52	46
Salad	48	54

1. How many customers participated in the survey?
2. How many customers in the survey prefer pasta?
3. What percentage of the customers prefer steak with soup?
4. What percentage of the customers prefer pasta with salad?
5. Among the customers who prefer steak, what percentage prefer soup?

**Quiz 145** .....

1. Find the mean, median, and mode of the data set {2, 6, 5, 6, 8, 3}.

2. What is the median and interquartile range of the data?



3. Describe the shape of the distribution shown in the plot above.

4. What are the appropriate measures of center and variation for the distribution above?

- A) Mean and standard deviation
- B) Mean and interquartile range
- C) Median and standard deviation
- D) Median and interquartile range

5. The table comes from a survey of students. What percentage of the students are female students with no pet?

	Pet(s)	No pet
Male	40	80
Female	32	48

**Quiz 146** .....

Write the probability as a simplified fraction.

1. A ball is randomly drawn from a bag containing 5 white, 10 black, and 5 grey balls. What is the probability that the ball is white?
  
  
  
  
  
  
  
  
  
  
2. A die is rolled. What is the probability of getting a single-digit number?
  
  
  
  
  
  
  
  
  
  
3. A spinner with 10 equal sections marked 1 through 10 is spun. What is the probability of landing on a multiple of 3?
  
  
  
  
  
  
  
  
  
  
4. Logan hit a baseball on 14 out of 30 tries during practice. What is the experimental probability that he will hit the ball on his next try?
  
  
  
  
  
  
  
  
  
  
5. Luke shot 27 free throws and made 18 of them. What is the experimental probability that he misses the next free throw?

**Quiz 147** .....

Find the total number of possible outcomes.

1. You spin a spinner with eight equal sections numbered 1 through 8.
2. You select a day from a non-leap year. (A leap year has 366 days.)
3. You toss a coin and select a letter from the alphabet.
4. You buy a combo meal that consists of 1 sandwich, 1 side, and 1 drink. You have 5 choices of sandwiches, 6 choices of sides, and 2 choices of drinks.
5. You roll a die and spin a spinner with four equal sections marked 1 through 4.

**Quiz 148** .....

Find the total number of possible outcomes.

1. You toss a coin four times.
2. You roll a die and toss two coins.
3. You answer 3 multiple-choice questions with 4 options for each.
4. You make a 3-digit number using the digits 1 to 5 with repetition of digits.
5. You make a 3-digit number using the digits 1 to 5 without repetition of digits.

















**Quiz 158** .....

Solve.

1.  $7x - 8 = 3(x + 5) - 7$

2.  $4|x - 5| - 9 = 15$

3.  $-23 < 7 - 5x \leq 42$

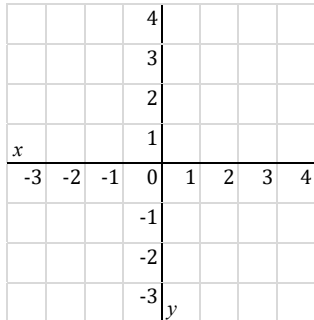
4.  $3 + |-6x| \geq 21$

5. The sum of three even consecutive integers is 78. Find the integers.

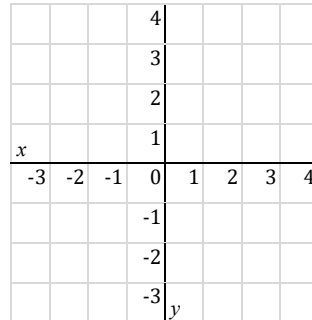
**Quiz 159** .....

Graph.

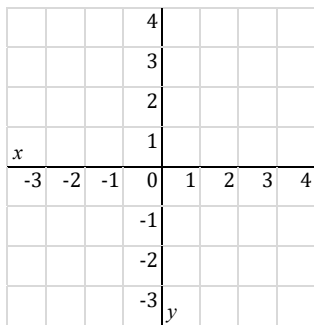
1.  $x - 2y = 2$



2.  $y = |x - 1| - 2$



3.  $3x + y > 3$



4. A line passes through  $(-1, 7)$  and  $(2, -5)$ . Write an equation of the line in slope-intercept form.

5. A bike rental shop charges a flat fee of \$5 plus \$7 per hour for renting a bike. Which expression represents the rental cost?

- A)  $5x + 7$ , where  $x$  is the number of hours
- B)  $7x + 5$ , where  $x$  is the number of hours
- C)  $5x + 7$ , where  $x$  is the number of bikes
- D)  $7x + 5$ , where  $x$  is the number of bikes

**Quiz 160** .....

Solve.

1.  $y = -2x - 9$   
 $4x + 5y = 3$

2.  $2x + 3y = 8$   
 $5x - 3y = -1$

3.  $3x + 2y = 7$   
 $5x + 4y = 15$

4. Flying with the wind, an airplane can fly 1,680 miles in 6 hours. Flying against the wind, the plane can fly the same distance in 7 hours. Find the speed of the plane in still air and the speed of the wind.

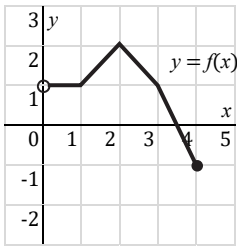
Graph the solution set.

5.  $x \geq 0$  and  $x + 3y < 3$

			4					
			3					
			2					
			1					
<i>x</i>	-3	-2	-1	0	1	2	3	4
			-1					
			-2					
			-3	<i>y</i>				

**Quiz 161** .....

Use the graph of  $f$  to answer the question.



1. Find the domain and range of  $f(x)$ .

2.  $f(2) + f^{-1}(-1) = ?$

Solve.

3. Is the table linear, quadratic, or exponential?

$x$	0	1	2	3	4
$y$	9	5	1	-3	-7

4. Suppose  $y$  varies inversely with  $x$ , and  $y = 2$  when  $x = 8$ . Find  $x$  when  $y = 4$ .

5. Write the explicit formula of the sequence 5, 8, 11, 14, 17, ...



**Quiz 162** .....

Simplify.

1.  $\sqrt{81} \div \sqrt[4]{81} - \sqrt[3]{8} \times \sqrt[5]{-1}$

2.  $\sqrt{80x^2yz^2}$

3.  $3\sqrt{24} - \sqrt{3}(\sqrt{6} + 2\sqrt{18}) + \sqrt{32}$

Solve.

4.  $\sqrt{2x + 5} = \sqrt{x + 9}$

5. The diagonal of a rectangle is 14 inches. Its width is 7 inches. What is the length of the rectangle in simplest radical form?

**Quiz 163** .....

Simplify. Write your answers in exponential form with positive exponents.

1.  $3x^4 \cdot 5x^{-3}$

2.  $x^5 \cdot (2x^2)^{-2}$

3.  $(27x^3)^{2/3}$

4.  $\left(\frac{32x^{1/2}}{x^{1/4}}\right)^{4/5}$

Write an exponential function that models the situation, then solve. Use a calculator.

5. A rare coin costs \$200 and appreciates (increases in value) at a rate of 5% per year. How much will the coin be worth after 5 years? Round to the nearest hundredth.

**Quiz 164** .....

Simplify in standard form. Use long division.

1.  $(x - 4)(x + 4)(x - 2)$

2.  $(3x^2 + 2x - 8) \div (x + 2)$

Factor completely.

3.  $3x^2 + 10x + 3$

4.  $8x^3 - 16x^2 + 8x$

5.  $-4x^3 - 12x^2 + x + 3$

**Quiz 165** .....

Solve using any method. Leave your answers as improper fractions or radicals in simplest form, if applicable.

1.  $2(x - 1)^2 - 18 = 0$

2.  $3x^2 - 9x + 6 = 0$

3.  $x^2 + 6x + 3 = 0$

4.  $4x^2 + 7x + 2 = 0$

5. A rectangle has an area of  $90 \text{ cm}^2$ . Its length is 3 cm longer than twice its width. Find the dimensions of the rectangle.

**Quiz 166** .....

Find the vertex and intercepts, then graph.

1.  $y = 2x^2 - 4x$

				4				
				3				
				2				
				1				
<i>x</i>				0	1	2	3	4
	-3	-2	-1	0	1	2	3	4
				-1				
				-2				
				-3				
				<i>y</i>				

2.  $y = -x^2 - 2x + 3$

					5			
					4			
					3			
					2			
					1			
<i>x</i>					0	1	2	3
	-4	-3	-2	-1	0	1	2	3
					-1			
					-2			
					<i>y</i>			

3. A parabola has a vertex at  $(-2, -8)$  and passes through  $(1, 10)$ . What are the zeros of the parabola?

4. The parabola  $y = x^2$  is scaled by 4, flipped over the  $x$ -axis, and shifted 5 units to the left. Find an equation of the transformed parabola in standard form.

5.  $h(t) = -16t^2 + 96t$

A ball is shot vertically upward from ground level with an initial speed of 96 feet per second. The function above models its height  $h$ , in feet, after  $t$  seconds. When will the ball hit the ground?

**Quiz 167** .....

Simplify. State any excluded values.

1. 
$$\frac{4x^2 - 9}{2x^2 + 5x - 12}$$

2. 
$$\frac{5x + 15}{x^2 - 10x + 25} \div \frac{x + 3}{x - 5}$$

3. 
$$\frac{x}{x - 3} - \frac{x - 6}{x^2 - 7x + 12}$$

Solve. Check for extraneous solutions.

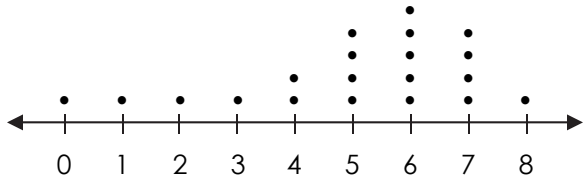
4. 
$$\frac{x}{x + 5} = \frac{4}{x} - \frac{3}{x + 5}$$

5. Alex can clean the house in 1 hour. Working together, Alex and Leah can clean the house in just 15 minutes. How long will it take Leah alone to clean the house?

**Quiz 168** .....

1. Find the mean, median, and mode of the data set {8, 13, 3, 8, 4, 1, 15, 6, 5, 7}.

2. What is the median of the data?



3. Describe the shape of the distribution shown in the plot above.

4. What type of correlation would you expect between the number of hours spent exercising and the amount of calories burned?

5. The table comes from a survey of students. What percentage of the surveyed female students have no pet?

	Pet(s)	No pet
Male	40	80
Female	32	48





**Quiz 170** .....

Solve.

1.  $5x + 12 = 7$

2.  $3(x - 1) - x = 9 - 4x$

3.  $0.4x + 1.7 = 2.02$

4.  $\frac{1}{3}x + \frac{3}{4} = \frac{1}{2}x + \frac{1}{6}$

5.  $4|3 - 2x| + 9 = 21$

**Quiz 171** .....

Solve.

1.  $9x - 2 \leq 34$

2.  $6x - 4(2x + 1) > -8$

3.  $-7 \leq 3 - 5x < 8$

4.  $4x - 3 \geq 9$  or  $6 - x < 8$

5.  $\frac{2}{5}|x + 3| - 1 < \frac{3}{5}$

**Quiz 172** .....

Solve.

1.  $y = x + 3$   
 $3x + y = 15$

2.  $2x + y = 7$   
 $3x - y = -12$

3.  $4x - y = -3$   
 $8x - 2y = 9$

4.  $2x + 7y = -4$   
 $4x + 5y = 10$

5.  $6x - 9y = 18$   
 $4x - 6y = 12$

**Quiz 173** .....

Solve. Check for extraneous solutions.

1.  $4\sqrt{x} - 1 = 7$

2.  $\sqrt{x-3} + 5 = 2$

3.  $\sqrt{2x-1} - 3 = 0$

4.  $\sqrt{3x+8} = \sqrt{x+4}$

5.  $3\sqrt{x-1} = \sqrt{6x-7}$

**Quiz 174** .....

Solve.

1.  $x^2 - 3x - 18 = 0$

2.  $(x - 1)^2 - 20 = 0$

3.  $2x^2 + 4x + 7 = 0$

4.  $4x^2 - 4x - 24 = 0$

5.  $x^2 + 10x + 18 = 0$

**Quiz 175** .....

Solve. Check for extraneous solutions.

1. 
$$\frac{2}{4x-1} = \frac{3}{x+3}$$

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

3. 
$$\frac{x+2}{3x} - \frac{1}{x} = \frac{x-1}{9x}$$

4. 
$$\frac{x+1}{x+3} - \frac{1}{x-1} = \frac{4}{x+3}$$

5. 
$$\frac{x}{x+2} = \frac{x+16}{x^2-3x-10}$$