

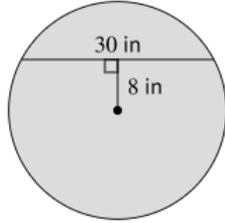
# RISING GRADE 12B SUMMER REVIEW PACKET

## DUE ON THE FIRST DAY OF SCHOOL

The problems in this packet are designed to help you review topics from previous mathematics courses that are essential to your success in your next math class. **You are expected to bring this completed packet to class on the first day of school.** In addition, this packet will count as part of your first quarter grade. **Upon returning, you will be ASSESSED on the content of this packet.** All contents outlined in the packet are General Math objectives. Neatly **SHOW YOUR WORK** on a separate sheet of paper.

- 1 Write an equation of a circle with a radius of 5 and a center at  $(2, 3)$ .

- 2 A 30-inch chord in a circle is 8 inches from the center of the circle, as shown in the following figure.



What is the length, in inches, of the radius of the circle?

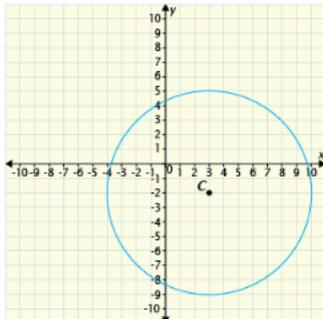
- 3 Circle  $C$  has radius 5 and center  $C(6, -2)$ . Find the equation of circle  $C$ .

- (A)  $(x + 6)^2 + (y - 2)^2 = 5$   
(B)  $(x - 6)^2 + (y + 2)^2 = 5$   
(C)  $(x + 6)^2 + (y - 2)^2 = 25$   
(D)  $(x - 6)^2 + (y + 2)^2 = 25$

- 4 Circle  $C$  has radius  $4\sqrt{3}$  and center  $C(-2, 4)$ .

Find the equation of circle  $C$  in standard form.

5

The diagram shows circle  $C$ .Find the equation of circle  $C$ .

6

An equation of circle  $O$  is  $x^2 + y^2 + 4x - 8y = -16$ . The statement that best describes circle  $O$  is the

- (A) center is  $(2, 4)$  and is tangent to the  $x$ -axis
- (B) center is  $(2, 4)$  and is tangent to the  $y$ -axis
- (C) center is  $(2, 4)$  and is tangent to the  $x$ -axis
- (D) center is  $(2, 4)$  and is tangent to the  $y$ -axis

7

Circle  $C$  has radius 5 and center  $C(6, -2)$ .Find the equation of circle  $C$ .

- (A)  $(x + 6)^2 + (y - 2)^2 = 5$
- (B)  $(x - 6)^2 + (y + 2)^2 = 5$
- (C)  $(x + 6)^2 + (y - 2)^2 = 25$
- (D)  $(x - 6)^2 + (y + 2)^2 = 25$

8

The equation for the circumference,  $C$ , of a circle is  $C = 2\pi r$ . Solve this equation for  $\pi$ .

- (A)  $\pi = 3.14$
- (B)  $r = \frac{2C}{\pi}$
- (C)  $r = \frac{C}{2\pi}$
- (D)  $\pi = \frac{C}{2r}$
- (E)  $2 = \frac{C}{\pi r}$

9

The equation  $x^2 + y^2 - 4x + 2y = b$  describes a circle.

**Part A**

Determine the  $y$ -coordinate of the center of the circle.

Enter your answer in the box.

**Part B**

The radius of the circle is 7 units. What is the value of  $b$  in the equation?

Enter your answer in the box.

10

The equation of an ellipse is  $\frac{(x+2)^2}{25} + \frac{(y-3)^2}{16} = 1$

(a)

What is the center of the Ellipse?

(A) (2,3)

(B) (2,-3)

(C) (-2,3)

(D) (-2, -3)

(b) List the coordinate of each. (least to greatest)

Vertices:

Co- Vertices

Foci:

(c) Graph the ellipse  $\frac{(x+2)^2}{25} + \frac{(y-3)^2}{16} = 1$

Remember to plot the foci first (both of them) then one point on the ellipse.

Find the components of the ellipse  $\frac{(x-9)^2}{64} + \frac{(y+2)^2}{25} = 1$

**Part A**

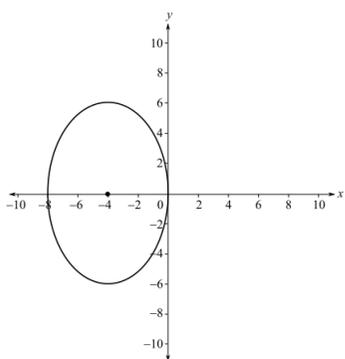
center

**Part B**

major axis

minor axis

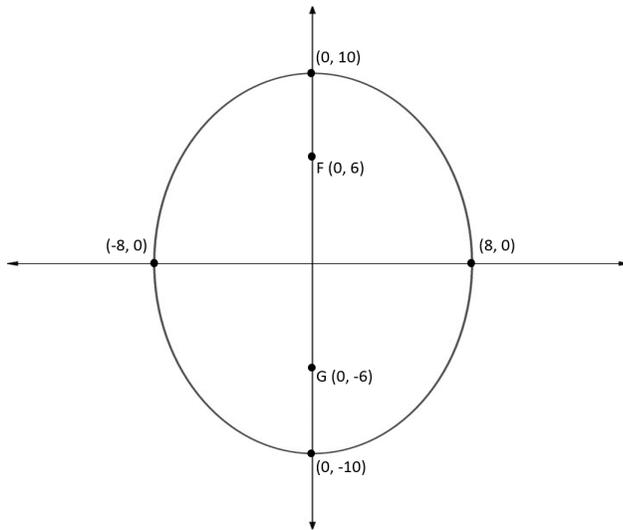
Which of the following equations represents the equation of the ellipse given in the following graph? Choose the correct option.



- (A)  $-\frac{x^2}{36} - \frac{(y+4)^2}{16} = 1$
- (B)  $\frac{x^2}{36} - \frac{(y+4)^2}{16} = 1$
- (C)  $-\frac{x^2}{36} + \frac{(y+4)^2}{16} = 1$
- (D)  $\frac{x^2}{36} + \frac{(y+4)^2}{16} = 1$

13

The ellipse graphed below has foci  $F$  and  $G$  and vertices as shown. For every point  $P$  on the ellipse,  $PF + PG = k$ , where  $k$  is a constant. Find the value of  $k$ .



$k =$

14

Which is the equation for an **ellipse** with **vertices**  $(-3, 4)$ ,  $(11, 4)$  and **foci**  $(-1, 4)$ ,  $(9, 4)$ ?

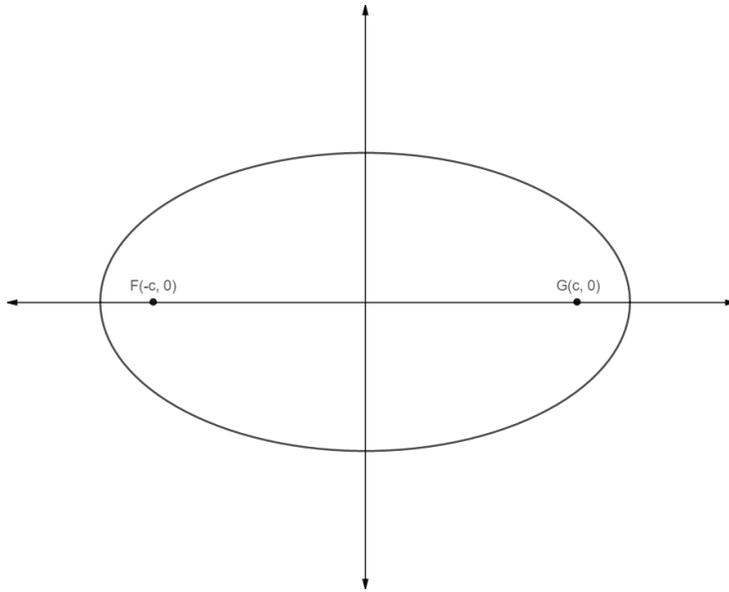
- (A)  $\frac{(x-4)^2}{49} + \frac{(y-4)^2}{24} = 1$
- (B)  $\frac{(x-4)^2}{49} + \frac{(y-4)^2}{25} = 1$
- (C)  $\frac{x^2}{7} + \frac{y^2}{5} = 1$
- (D)  $\frac{(x-4)^2}{24} + \frac{(y-4)^2}{49} = 1$

15

The ellipse given by the equation  $\frac{x^2}{25} + \frac{y^2}{9} = 1$  is sketched below.

The foci of the ellipse are  $F(-c, 0)$  and  $G(c, 0)$ . For every point  $P$  on the ellipse,  $PF + PG = 10$ .

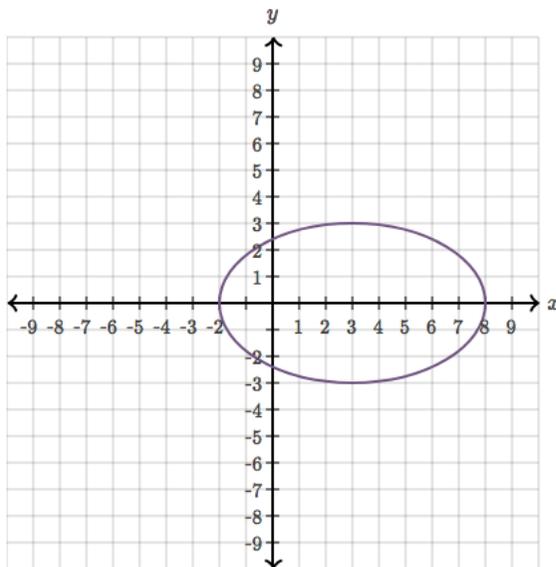
Find the value of  $c$ . To get started, place point  $P$  on the ellipse so that both  $PF$  and  $PG$  are known.



$c =$

16

Find the components of the ellipse



Center point

Coordinates of the Foci:

Equation in standard form:

17

Use the information provided to write the standard form equation of the hyperbola.

Vertices: (9, -10), (-7, -10)

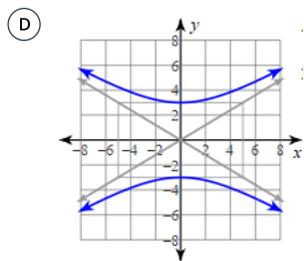
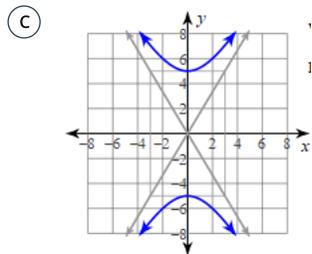
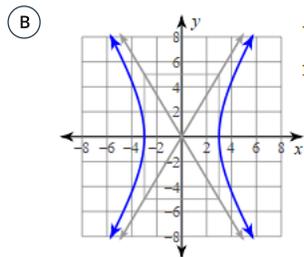
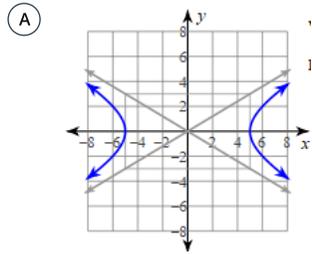
Asymptotes:  $y = \frac{3}{2}x - \frac{23}{2}$ ;  $y = -\frac{3}{2}x - \frac{17}{2}$ 


18

There are two parts to this problem.

(a) **Part A: Match the graph that matches this equation.**

$$\frac{x^2}{9} - \frac{y^2}{25} = 1$$



(b) PART B:

Identify the following

Center: Major axis: Minor axis:

19

Let  $F(-6, 0)$  and  $G(6, 0)$  be the foci of a hyperbola. Let the points  $P(x, y)$  on the hyperbola satisfy either  $PF - PG = 6$  or  $PG - PF = 6$ .

Derive an equation for this hyperbola, writing your answer in the form  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ .

The equation for the hyperbola is .

20

Write the equation of the hyperbola in standard form with the given characteristics.

Vertices:  $(-7, 16)$   $(-7, -8)$

Foci:  $(-7, 17)$   $(-7, -9)$

21

Use the information provided to write the standard form equation of the hyperbola.

Vertices:  $(9, -10)$ ,  $(-7, -10)$

Asymptotes:  $y = \frac{3}{2}x - \frac{23}{2}$ ;  $y = -\frac{3}{2}x - \frac{17}{2}$

22

Find the vertices of the hyperbola

$$\frac{(x+2)^2}{9} - \frac{(y-2)^2}{16} = 1$$

(separate your answers with a comma)

23

**This question has four parts.**

Given the hyperbola,  $2x^2 - 8y^2 - 20x - 32y + 2 = 0$

**Part A**

What is the center of the hyperbola? Write your answer using proper ordered pair notation.

Center:

**Part B**

What are the coordinates of the foci?

Foci:

**Part C**

What are the slopes of the asymptotes?

Slopes of Asymptotes:

**Part D**

What are the coordinates of the vertices?

Coordinates of Vertices:

24

Use the given equation to answer the following.  $25x^2 - 9y^2 + 200x + 18y + 166 = 0$

Standard Form of the Hyperbola:

Eccentricity (rounded to the tenths place):

**25** Part A

(a) What is the axis of symmetry of the parabola  $f(x) = -(x + 4)^2 + 2$ .

- (A)  $x = 8$
  - (B)  $x = -8$
  - (C)  $x = 4$
  - (D)  $x = -4$
- 

(b)

## Part B

The graph of the parabola  $f(x) = -(x + 4)^2 + 2$  opens  .

a

- downward
  - upward
- 

**26**

Consider the equation of parabola  $y = 5x^2 - 30x + 45$ .

Its vertex is located at (  ,  )

---

**27**

Consider the equation of parabola  $f(x) = -(x + 7)^2 - 10$ . The  $x$ -coordinate of the vertex is .

---

**28**

The axis of symmetry of a parabola is  $x = 6$ , and one point on the parabola is  $(2, 8)$ . What is another point on the parabola?

- (A)  $(2, 2)$
  - (B)  $(2, 14)$
  - (C)  $(-4, 8)$
  - (D)  $(10, 8)$
- 

**29**

The equation of a parabola is  $f(x) = x^2 - 4x - 5$ .

The axis of symmetry is  $x =$  .

The vertex of the parabola is (  ,  )

---

**30**

A parabola has its vertex at  $(2, -3)$  and its  $y$ -intercept at  $(0, 5)$ .

Write an equation of the parabola in the form  $y = a(x - h)^2 + k$ .

$y =$

---

31 What is the vertex of the parabola  $f(x) = x^2 - 2x - 8$  that has an axis of symmetry at  $x = 1$ ?

- (A)  $(2, -8)$
- (B)  $(1, -9)$
- (C)  $(3, -5)$
- (D)  $(4, 0)$

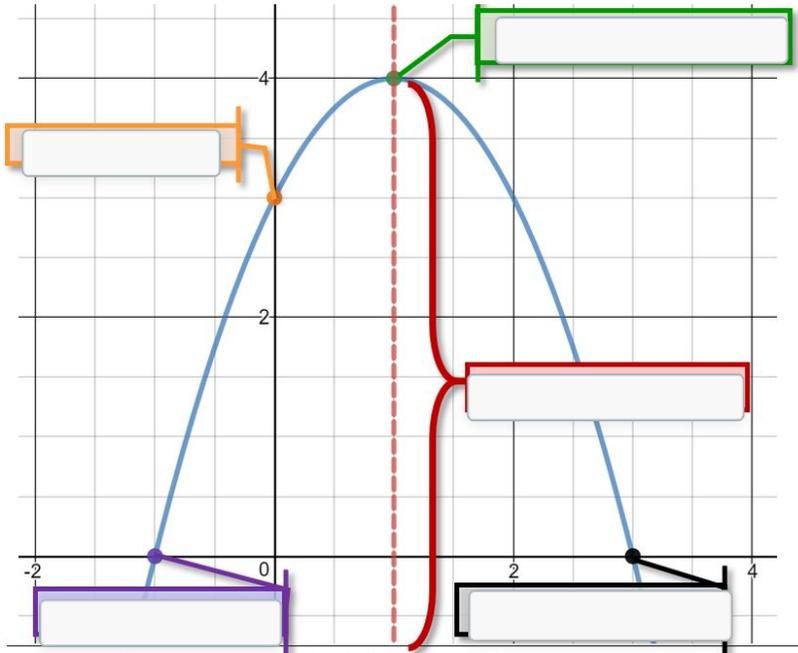
32 The equation of a parabola is  $f(x) = x^2 - 4x - 5$ . The axis of symmetry is  $x = 2$ . Determine the vertex of the parabola. Show your work.

(  ,  )

33 What is the equation of a parabola with vertex  $(-5, 6)$  and  $a=3$

- (A)  $y = 3(x + 5)^2 - 6$
- (B)  $y = 3(x + 5)^2 + 6$
- (C)  $y = 5(x - 3)^2 - 6$
- (D)  $y = 3(x - 6)^2 - 5$

34 Label the x-intercept, y-intercept, vertex and axis of symmetry in the following graph



35 The highest or lowest point on a parabola is called the \_\_\_\_\_ . (one word)

36 What is the axis of symmetry for a parabola with  $x$ -intercepts  $(-3, 0)$  and  $(7, 0)$ ?

- (A)  $x = -1$
- (B)  $x = 2$
- (C)  $x = 4$
- (D)  $x = 5$

37 Choose the correct equation of the parabola shown in the graphs below.

DRAG & DROP THE ANSWER

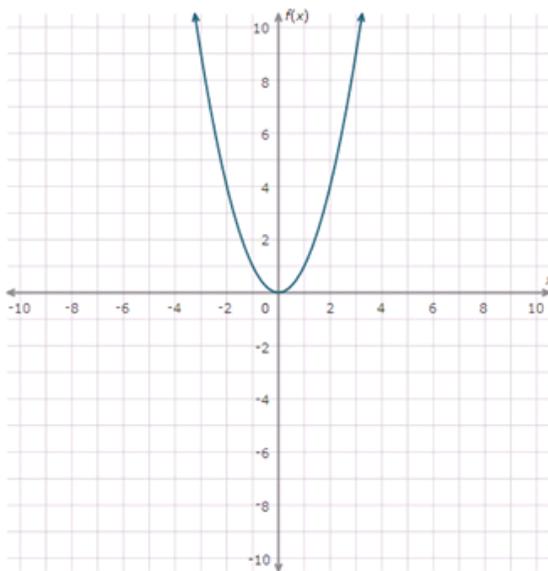
$f(x) = x^2$

$f(x) = 5x^2$

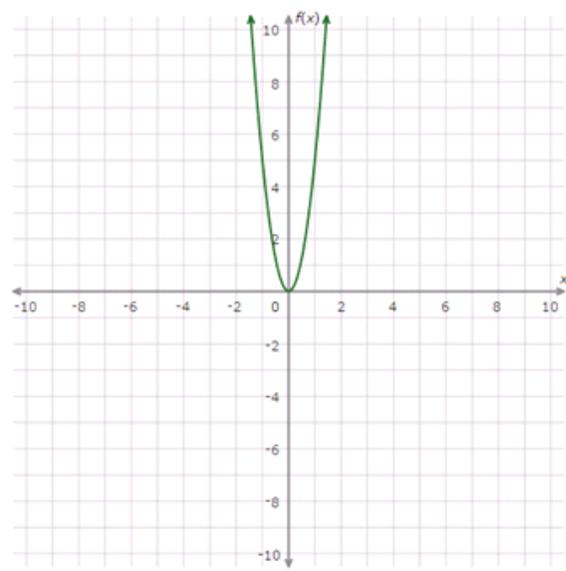
$f(x) = 3x^2$

$f(x) = 2x^2$

Graph 1:



Graph 2:



38 Which binomial expression,  $(a + b)^n$ , has an expansion of  $81x^4 - 216x^3y + 216x^2y^2 - 96xy^3 + 16y^4$ ?

- (A)  $(2x - 3y)^4$
- (B)  $(3x - 2y)^4$
- (C)  $(2x + 3y)^4$
- (D)  $(3x + 2y)^4$

39 Factor the binomial  $25x^2 - 121$

40

Factor using a GCF:  
 $16xy^2 + 28xy + 8y$

41

Which expression is equivalent to  $x^2 - 16$ ?

- (A)  $(x - 4)^2$   
(B)  $x^2 - 4x - 16$   
(C)  $(x + 4)(x - 4)$   
(D)  $(x - 8)(x + 2)$

42

A certain type of combination lock has 3 dials. The first 2 dials each have settings for all the digits 0 through 9, and the third has settings for all the 26 capital letters of the alphabet. A combination consists of one setting from each of the dials. How many different combinations are possible?

- (A) 260  
(B) 520  
(C) 1,664  
(D) 2,600  
(E) 5,200

43

On a separate sheet of paper, create a tree diagram that shows the combinations for a deli menu.

Bread: White, Rye

Meat: Turkey, Ham, Beef

Cheese: Swiss, Cheddar

How many of the combinations include cheddar and turkey?

44

There are 12 students running for three student council positions: president, vice president, and secretary. Which of the following is the number of ways in which these three positions can be filled by 12 candidates?

- (A) 1728  
(B) 1320  
(C) 220  
(D) 479001600

45

A local ice cream shop has the following selection of choices to create your own treat:

**Ice Cream:** Vanilla, Chocolate, Strawberry, Coffee, Butter Pecan

**Toppings:** Fudge, Walnuts, Whipped Cream, Peanuts

**Cone or Cup:** Cup, Sugar Cone, Waffle Cone

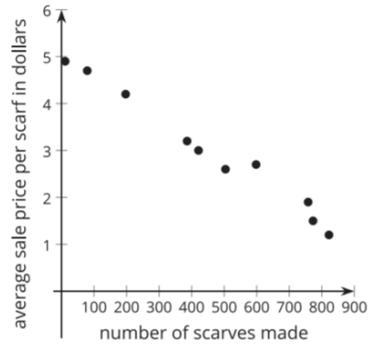
Assuming you can only have one from each category, how many total combinations can you make?

46

An ice hockey team of six members were chosen from sixteen possible individuals. It is given that the goalkeeper is chosen between the two players, Sam or Peter. What is the number of ways of choosing the team?

47

A company that makes scarves has many different styles and colors that people can order. The company keeps track of the number of each style, color combination they make, and the average sale price for the scarves having that combination. They create a scatter plot using the data with the number of scarves along the  $x$  - axis and the average price per scarf, in dollars, along the  $y$  - axis.



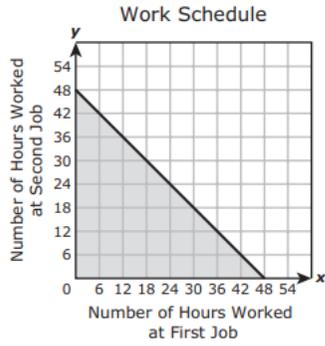
The data in the graph suggest a linear association. Which of the functions best represents the equation of the line of best fit?

- (A)  $y = -225x + 1,124$
- (B)  $y = -0.004x + 5$
- (C)  $y = -x + 5$
- (D)  $y = 0.01x + 5$

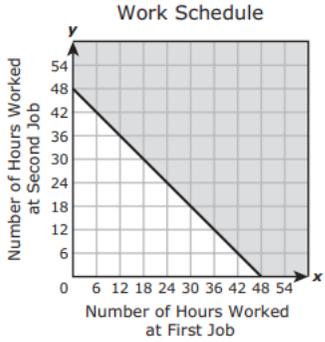
A college student has two different jobs. Her combined work schedules consist of no more than 48 hours in one week.

Which graph best represents the solution set for all possible combinations of  $x$ , the number of hours she worked at her first job, and  $y$ , the number of hours she worked at her second job, in one week?

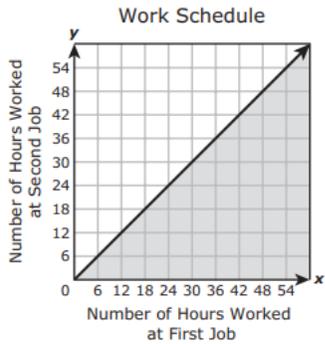
(A)



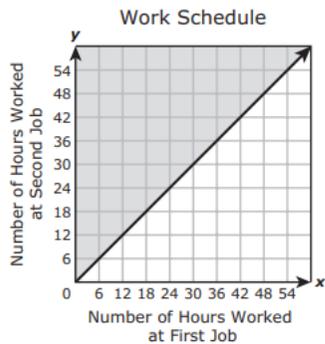
(B)



(C)



(D)



49 The probability distribution for  $x$  is presented in the following table. What is the expected value of the random variable  $x$ ?

$x$	2	3	4	5
$P$	.45	.15	.3	.1

- (A) 3.66
- (B) 3.05
- (C) 1.55
- (D) 2.45

50 The probability distribution for the number of school sports played by a randomly selected student at a high school is given in the table.

Number of School Sports	0	1	2	3
Probability	0.508	0.304	0.144	0.044

Which of the following statements is the most reasonable based on a random sample of 300 students?

- (A) Fifty students play zero sports.
- (B) Ninety students play one sport.
- (C) More students play two or three sports than play one sport.
- (D) Sixty-five students play one or two sports.

51 A chance experiment consists of rolling two dice. Consider the random variable of the number of threes rolled.  
 a. Create a discrete probability distribution for the number of threes rolled. Round the answers to the nearest thousandth if necessary.

<b>Number of Threes</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Probability</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>

b. What is the probability of rolling at least one three when rolling two dice? Round the answer to the nearest thousandth.

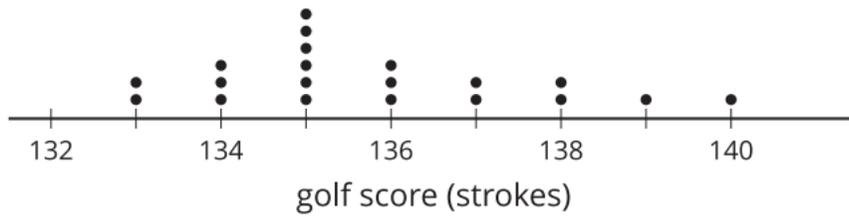
52 Let  $Y$  denote the number of broken eggs in a randomly selected carton of one dozen "store brand" eggs at a local supermarket. Suppose that the probability distribution of  $Y$  is as follows.

<b>Value</b>	0	1	2	3	4
<b>Probability</b>	0.77	0.11	0.08	0.03	0.01

What is the probability that at least 2 eggs in a randomly selected carton are broken?

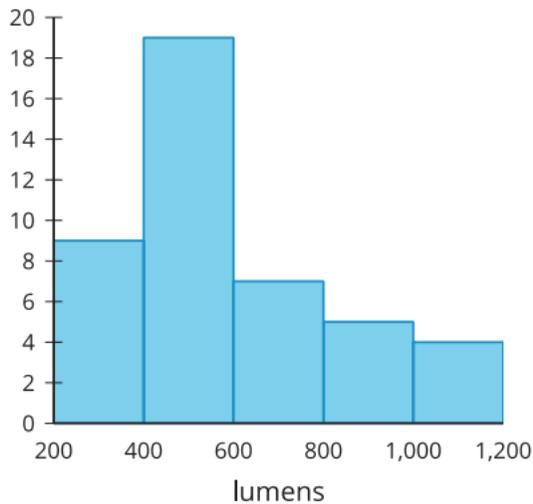
53 Describe the shape of the distribution shown in the dot plot.

The dot plot displays the golf scores from a golf tournament.



- (A) Uniform
- (B) Bimodal
- (C) Left-Skewed
- (D) Right-Skewed
- (E) Symmetrical
- (F) Bell-shaped

54 Describe the shape of the distribution shown in the histogram which displays the light output, in lumens, of various light sources.

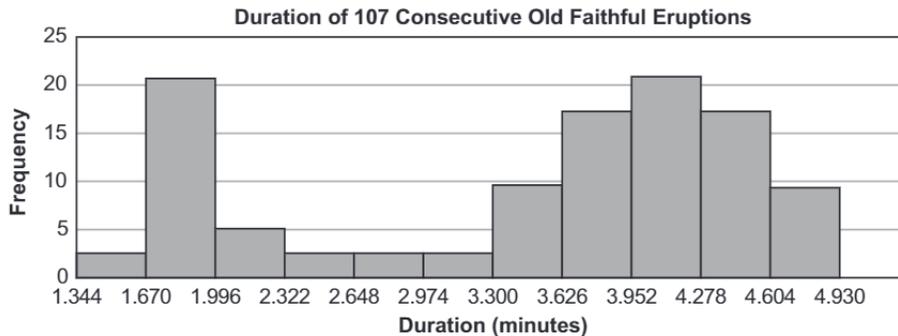


- (A) Skewed right with a center near 600 lumens.
- (B) Skewed right with a center near 200 lumens.
- (C) Skewed right with a center near 1000 lumens.
- (D) Skewed left with a center near 600 lumens.
- (E) Skewed left with a center near 200 lumens.
- (F) Skewed left with a center near 800 lumens.

55 Which of the following statements is TRUE in regard to a binomial experiment?

- (A) A binomial experiment consists of a fixed number of trials.
- (B) In a binomial experiment, the outcome of one trial must not have any influence over the other.
- (C) In a binomial experiment, success or failure are the only two possible outcomes.
- (D) All the statements are true.

56 This histogram shows the frequency distribution of duration times for 107 consecutive eruptions of the Old Faithful geyser. The duration of an eruption is the length of time, in minutes, from the beginning of the spewing of water until it stops. What is the BEST description for the distribution?



- (A) bimodal
- (B) uniform
- (C) multiple outlier
- (D) skewed to the right

57 The probability that event A occurs is  $\frac{5}{7}$  and the probability that event B occurs is  $\frac{2}{3}$ . If A and B are independent events, what is the probability that A and B both occur? Write your result in the empty box provided below in a simplest fraction form.

P(A and B) =

Note: Use slash (/) to separate numerator and denominator.

58 Which situation best describes conditional probability?

- (A) finding the probability of an event occurring two or more times
- (B) finding the probability of an event occurring only once
- (C) finding the probability of two independent events occurring at the same time
- (D) finding the probability of an event occurring given another event had already occurred

59 Probabilities for two events, event  $A$  and event  $B$ , are given.

$$P(A \text{ and } B) = 0.14$$

$$P(B) = 0.4$$

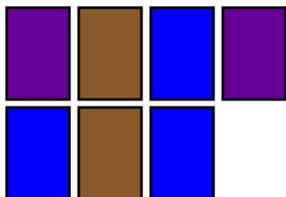
What is the probability of  $A$  given  $B$ ?

60 The probability that the event  $A$  occurs is  $\frac{3}{4}$ , the probability that event  $B$  occurs is  $\frac{5}{8}$ , and the probability that events  $A$  and  $B$  both occur is  $\frac{5}{9}$ . What is the probability that  $A$  occurs given that  $B$  occurs?

Answer: .

Note: Use slash (/) to separate numerator from denominator.

61 A card is picked from the following cards.



Find the probability that the card drawn is purple.

Answer: .

Note: Use slash (/) to separate numerator and denominator.

62 Determine whether the function below is exponential growth or exponential decay, and find the percentage rate of change.

$$P(t) = 3.5(0.91)^t$$

- (A) Exponential decay; 3.5%
- (B) Exponential decay; 9%
- (C) Exponential growth; 9%
- (D) Exponential growth; 3.5%

63 Solve the equation to the nearest thousandth.  $4^{2x-1} = 38$

64 Solve the exponential expression to the nearest thousandth.  $8(5^x) - 14 = 78$

65 When solving the given equation, what is the **first step**?

(a) Given:  $2x - 4 = 24$

- A Add 4 to both sides
- B Subtract 4 from both sides
- C Multiply 2 to both sides
- D Divide 2 from both sides

(b) When solving the given equation what is the **second step** you must complete?

Given:  $2x - 4 = 24$

- A Add 4 to both sides
- B Subtract 4 from both sides
- C Multiply 2 to both sides
- D Divide 2 from both sides

(c) Solve the equation

$$2x - 4 = 24$$

$x =$

66 Directions - Based on the equation, determine if it represents exponential growth or exponential decay.

Equation	Growth or Decay?
$y = 400 \cdot .99^x$	a
$y = 0.5 \cdot 3^x$	b
$y = 12 \cdot 4^x$	c
$y = 100 \cdot \left(\frac{1}{2}\right)^x$	d

- a
- Exponential Growth
  - Exponential Decay

- b
- Exponential Growth
  - Exponential Decay

- c
- Exponential Growth
  - Exponential Decay

- d
- Exponential Growth
  - Exponential Decay

(Lesson 32) Determine if each equation represents exponential growth or exponential decay.

Equation	Growth or Decay?
$y = 400 (.99)^x$	a
$y = 0.5 (1.001)^x$	b
$y = 12 (4)^x$	c
$y = 100 \left(\frac{1}{2}\right)^x$	d

a

- Exponential Growth
- Exponential Decay

b

- Exponential Growth
- Exponential Decay

c

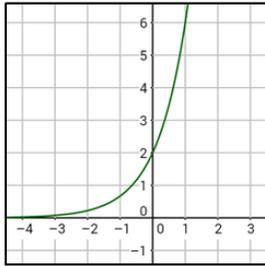
- Exponential Growth
- Exponential Decay

d

- Exponential Growth
  - Exponential Decay
-

Directions - Select all the graphs that represent Exponential Growth or Exponential Decay.

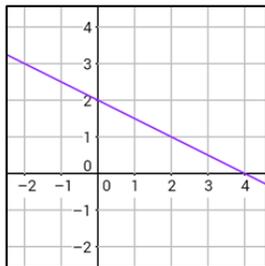
A



B



C



D



(Lesson 32) The population of a town is decreasing at a rate of 1% per year. In 2000 there were 1300 people. Write an exponential decay function to model this situation. Then find the population in 2008.

- (A) Approximately 1100 people
- (B) Approximately 1200 people
- (C) Approximately 1300 people
- (D) Approximately 1500 people

70

Select **all** exponential functions:

A  $y = \frac{3}{2}x + 3$

B  $y = 3 \cdot (2)^x$

C  $f(x) = .5 \cdot (3)^x$

D  $y = 3x$

E  $f(x) = 2 \cdot (2)^x$

F  $f(x) = 4.5$

71

Select all the functions that represent exponential decay.

A  $y = 2(0.7)^x$

B  $y = 0.7(2)^x$

C  $y = 0.9(3)^x$

D  $y = 3(0.9)^x$

72

How is this logarithm written in exponential form?

$$\log_3(81) = x$$

A  $x^3 = 81$

B  $3x = 81$

C  $3^x = 81$

D  $x = 3^{81}$

73

Select all the functions that represent exponential growth.

A  $f(x) = 9(1.03)^x$

B  $f(x) = 4(0.97)^x$

C  $f(x) = 5(3.5)^x$

D  $f(x) = 7(0.5)^x$

74

Solve the exponential expression to the nearest thousandth.  $8(5^x) - 14 = 78$

75 Rewrite the equation in exponential form.

$$\log_a b = c$$

(A)  $a^b = c$

(B)  $b^a = c$

(C)  $b^c = a$

(D)  $a^c = b$

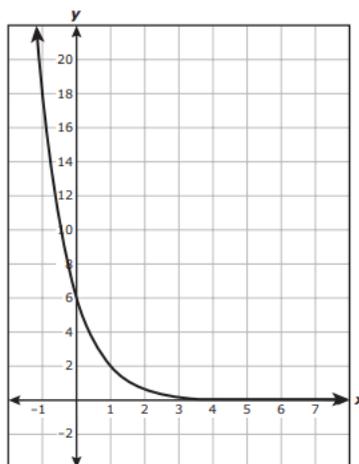
76 Evaluate the following exponential function when  $x = 0$ .

$$f(x) = 13(2)^x + 9$$

$f(0) =$

77 Rewrite the logarithm into exponential form.  $\log_3 9 = x$

78 An exponential function is graphed on the grid.



Which function is best represented by the graph?

(A)  $g(x) = 6\left(\frac{1}{3}\right)^x$

(B)  $g(x) = 6(3)^x$

(C)  $g(x) = 6 - \left(\frac{1}{3}\right)^x$

(D)  $g(x) = 6 - (3)^x$

79

(Lesson 31) The value of an antique car is modeled by the function  $V(t) = 107000(1.125)^t$ , where  $t$  is the number of years since 2005. By what percent rate is the value of the car increasing per year?

- (A) 1.125%
  - (B) 0.125%
  - (C) 12.5%
  - (D) 125%
- 

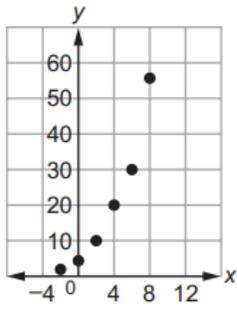
80

(Lesson 32) The population of a town is decreasing at a rate of 1% per year. In 2000 there were 1300 people. Write an exponential decay function to model this situation. Then find the population in 2008.

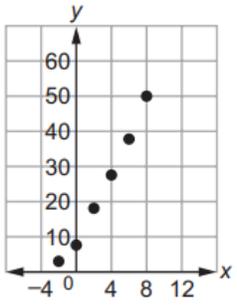
- (A) Approximately 1100 people
  - (B) Approximately 1200 people
  - (C) Approximately 1300 people
  - (D) Approximately 1500 people
-

81 Which scatter plot BEST represents a model of exponential growth?

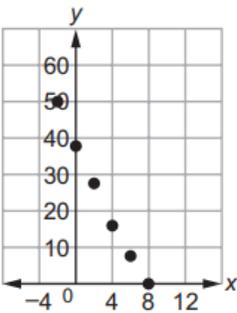
(A)



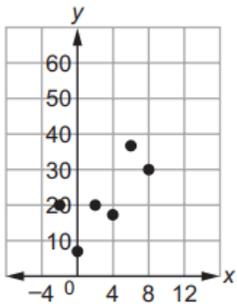
(B)



(C)



(D)



82

Expand the logarithm  $\ln\left(\frac{3 \cdot x^4}{y}\right)$

83 Change the following exponent into a logarithm  $64 = 4^3$

- (A)  $\log_3 4 = 64$
- (B)  $\log_4 64 = 3$
- (C)  $\log_{64} 3 = 4$
- (D)  $\log_4 3 = 64$

---

84 Simplify the logarithm  $2\log(a) - 3\log(b) - \log(c)$

---

85 For the logarithm  $\log(17)$ , what is the base of the logarithm?

- (A) 0
- (B) 1
- (C) 10
- (D) e
- (E) 17

---

86 Simplify the logarithm  $\log_4(16) - \log_4(64)$

---

87 Simplify the logarithm  $\log(4) + 2 \cdot \log(x)$

---

88 Convert the following logarithm into an exponent  $\log(x - 2) = 4$

- (A)  $x^4 = 2$
- (B)  $10^{x-2} = 4$
- (C)  $10^4 = x - 2$
- (D)  $x = 2^4$

---

89 Simplify the logarithm  $4\log_5 x + 3\log_5 y - 2\log_5 z$

90 Simplify the logarithm  $4 \log_5 x + 3 \log_5 y - 2 \log_5 z$

91 Simplify the logarithm  $\log_4(16) - \log_4(64)$

92 Simplify/condense the logarithm  $\log(4) + 2 \cdot \log(x)$  into a single logarithm.

93 The range a logarithm function  $f(x)$  is the same as the domain of the its inverse.

A True

B False

94 When no base is written for the log, we consider it the common logarithm with a base of 10.

A True

B False

95 Rewrite the logarithm into exponential form.  $\log_3 81 = x$

Exponential form:

Then solve for x.

x =

96 Express as a single logarithm in simplified form.  $\log(10) - \log(0.1)$

97 Based on the following logarithm, determine what the value of  $b$  is.  $\log_b(64) = 6$

98 Which type of function is the inverse of logarithms?

- (A) Quadratic
- (B) Square Root
- (C) Exponential
- (D) Logarithms

99 Based on the following logarithm, determine what the value of  $b$  is.  $\log_b 125 = 3$

100 Solve the following logarithmic equation for  $x$ .

$$\log_5(2x - 8) = \log_5(4x - 10)$$

$x =$

101 When no base is written for the log, we consider it the common logarithm with a base of 10.

- (A) True
- (B) False

102 Write the following exponential equation in log form.  $4^{-3} = \frac{1}{64}$

- (A)  $\log_{64} 4 = -3$
- (B)  $\log_{-3} 4 = \frac{1}{64}$
- (C)  $\log_4 \frac{1}{64} = -3$
- (D)  $\log_4 -3 = \frac{1}{64}$

103 Express as a single logarithm in simplified form.  $2 \log 2 + 4 \log 3$

104 Change the following log to exponent form  $\ln(x) = 5$

- (A)  $x = e^5$
- (B)  $x = 5^e$
- (C)  $x = 10^5$
- (D)  $x = 5^{10}$

105

Directions - Use the compound interest formula to calculate the final balance.

Compound Interest Formula:  $P \left(1 + \frac{r}{n}\right)^{nt}$ 

\$300 compounded quarterly at 5% for 8 years.

Final balance = \$  (if necessary, round to two decimal places)

106

Directions - Identify the key components, create a compound interest equation, and answer the questions.

You invest \$4000 into an account that compounds interest on a quarterly basis at 3%. How much money will you have

after 5 years? Compound Interest formula:  $A = P \left(1 + \frac{r}{n}\right)^{nt}$ 

a) P = <input type="text"/>	e) Compound Interest Equation: <input type="text"/>
b) r = <input type="text"/>	f) Value after 5 years = <input type="text"/> (round to two decimal places)
c) n = <input type="text"/>	
d) t = <input type="text"/>	

107

Directions - Find the balance in the account after the time interval. Use the compound interest formula:

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

\$18,000 at 9% compounded semiannually for 6 years.

\$  (round to two decimal places).

108

The value of a mountain bike  $y$  (in dollars) can be approximated by the model  $y = 200(0.75)^t$ , where  $t$  is the number of years since the bike was new.**Part A**

Tell whether the model represents exponential growth or exponential decay.

 **Part B**

Identify the annual percent increase or decrease in the value of the bike.

**Part C**

Estimate when the value of the bike will be \$50.

**a**

- Growth
- Decay
- Enter Value

109

A local hairdresser bought 550 shares of a cosmetics corporation for \$15.74 per share. He sold the shares for \$18.97 per share. What was the percent increase in the price per share? Round to the nearest tenth of a percent.

1

%

What was the total purchase price for the 550 shares?

\$

2

What was the total selling price for the 550 shares?

3

What was the percent capital gain for the 550 shares? Round to the nearest tenth of a percent.

4

%

---

110

The probability of flipping a fair coin and heads landing face up is  $0.5$ . The probability of rolling a fair number cube, with sides numbered  $1$  through  $6$  and an odd number landing face up is  $0.5$ .

What is the probability of flipping heads or rolling an odd number?