

Incoming Grade 8 Summer Math (Scituate)

Created By Amanda Kent

1 Jason buys 2 baseball bats for \$300. What is the unit rate per bat ?

- (A) \$100
 - (B) \$125
 - (C) \$140
 - (D) \$150
-

2 A train in Japan can travel 813.5 miles in 5 hours.

Find the unit rate in miles per hour.

- (A) 162.7 miles/hr
 - (B) 325.4 miles / hr
 - (C) 650.8 miles / hr
 - (D) 813.5 miles / hr
-

3 A fast food restaurant was selling 7 boxes of chicken nuggets for \$25.90.

A competing restaurant was selling 3 boxes of chicken fingers for \$11.07.

Which food has a higher unit price?

Answer:

a

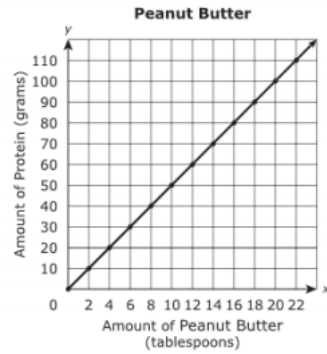
- Nuggets
 - Fingers
-

4 If 11 boxes of chocolates contain 220 chocolates in total, calculate how many chocolates 5 box of chocolates will contain.

chocolates.

5

The graph shows the amount of protein contained in a certain brand of peanut butter.



Which statement describes the meaning of the point $(6, 30)$ on the graph?

- (A) There are 6 grams of protein per tablespoon of peanut butter.
- (B) There are 30 grams of protein per tablespoon of peanut butter.
- (C) There are 6 grams of protein in 30 tablespoons of peanut butter.
- (D) There are 30 grams of protein in 6 tablespoons of peanut butter.

6

This table shows how the cost of Paco's birthday party depends on the number of guests.

Cost of Paco's birthday party:

Guests, x	4	8	12
Cost, y	20	40	?

Determine the cost of having 12 guests at the party.

- (A) The relationship is not directly proportional.
- (B) \$60
- (C) \$80
- (D) \$120

7

Solve the proportion $\frac{20}{3} = \frac{?}{6}$.

Choose the correct option.

- (A) 10
- (B) 23
- (C) 40
- (D) 120

8

Match each table of information to its constant of proportionality.

DRAG & DROP THE ANSWER

1

2

20

10

2	3	4	5	6	7
4	6	8	10	12	14

2	3	4	5	6	7
20	30	40	50	60	70

9

30% of \$40 is \$.

10

24 students in a class took an algebra test.

If 18 students passed the test, **what percent passed?**Answer: %

11

Joseph's lunch at a restaurant costs \$13.00, without tax. He leaves the waiter a tip of 17% of the cost of the lunch, without tax. What is the total cost of the lunch, including the tip, without tax?

- (A) \$2.21
- (B) \$10.79
- (C) \$13.17
- (D) \$15.21

12 A television that normally sells for \$459 is on sale at a 30% discount. What is the sale price of the television?

- (A) \$420
- (B) \$596.30
- (C) \$321.30
- (D) \$137.70

13 Add:

$$12 + (-25)$$

- (A) 13
- (B) -13
- (C) -37
- (D) 37

14 Subtract:

$$2 - (-6) =$$

- (A) 2
- (B) 6
- (C) 8
- (D) -8

15 $-2 - (-7) = ?$

16 Evaluate:

$$(-11) + (-11) =$$

17 $7 \times -8 = ?$

18 $-18 \div -3 = ?$

19 $-\frac{3}{4} \times \frac{2}{5} = ?$

20

$-24 \div 4 = ?$

21

On Monday, the temperature at 10 a.m. at Sam's house was -6° Fahrenheit. The temperature at 2 p.m. at Sam's house 2° Fahrenheit.

Select from the drop-down menus to correctly complete the statement.

From 10 a.m. to 2 p.m., the temperature at Sam's house **a** by **b** $^{\circ}$ Fahrenheit.

a

- increased
 decreased

b

- 3
 4
 8
 12

22

Anthony deposited \$500 into his bank account. A couple of days later he withdrew \$40. The next day he deposited \$30. A day later, he withdrew \$100. How much money is left in his account?

23

Ricky and Patrick are scuba diving. Ricky started out 12 feet below the surface. He descended 8 feet, rose 7 feet, and descended 13 more feet. Then he rested. Patrick started out at the surface. He descended 25 feet, rose 8 feet and descended another 6 feet. Then he rested. Which person rested at a greater depth?

- (A) Ricky
(B) Patrick
(C) They were at the same depth

24

City	Temperature on Day 1 ($^{\circ}$ C)	Temperature on Day 2 ($^{\circ}$ C)
Seattle	-6	-1
Cleveland	-12	-7
Pittsburgh	-11	-8
Orlando	-3	5

A meteorologist recorded the temperature in four cities on two days last year, as shown in the table above. Which city had the greatest increase in temperature between the two days?

a

- Cleveland
 Seattle
 Pittsburgh
 Orlando

25 Simplify the following expression by combining like terms. Select the most simplified expression:

$$2w + 5w - 6 + 4w$$

- (A) $5w$
 - (B) $11w - 6$
 - (C) $7w - 2$
 - (D) $7w - 6 + 4w$
-

26 Simplify $7(n+2)$

- (A) $7n-14$
 - (B) $-7n+14$
 - (C) $n+9$
 - (D) $7n+14$
-

27 Simplify the expression.

$$-6q + 7 - 2 + 4q$$

- (A) $5 - 2q$
 - (B) $2q - 5$
 - (C) $5 + 2q$
 - (D) $10 + 2q$
-

28 Simplify:

$$\frac{1}{2}(2a + 4)$$

- (A) $2a + 4$
 - (B) $a + 2$
 - (C) $2a + 2$
 - (D) $a + 4$
-

29 Solve each equation.

$$x - 10 = 4$$

30 Use the Distributive Property to simplify the following expression: $-2(x + 3)$

31 "7 less than a number t " written as an algebraic expression is:

- (A) $7 + t$
- (B) $7 \times t$
- (C) $t - 7$
- (D) $7 - t$

32 Part A

(a) Sophia pays a \$19.99 membership fee for an online music store. If Sophia purchases n songs for \$0.99 each, write an expression for the total cost.

- (A) $0.99n - 19.99$
- (B) $0.99n + 19.99$
- (C) $0.99n \times 19.99$
- (D) $\frac{0.99n}{19.99}$

(b)

Part B

If she buys two songs from a new album, what is the total cost?

Answer: \$

33 Solve $3n - 4 = 14$

Put the steps in order to solve the equation from first to last.

- $n = 6$
- Add 4 to both sides
- Divide both sides by 3.

34

Solve the following equations. Match the equation with the correct solution.

$$-8 + x = 3$$

$$x + 12 = 6$$

$$9x = -81$$

$$\frac{1}{4}x = 3$$

$$\frac{x}{-3} = 7$$

DRAG & DROP THE ANSWER

$$x = -9$$

$$x = -21$$

$$x = -6$$

$$x = 12$$

$$x = 11$$

35

Evan has a summer job to pick berries on a farm.

- He earns \$2.00 every 15 minutes that he picks strawberries.
- He earns \$2.40 for every 15 minutes that he picks blueberries.
- He picked strawberries for an hour and blueberries for 45 minutes.

How much money did Evan earn?

- (A) \$4.40
- (B) \$8.80
- (C) \$15.20
- (D) \$26.40

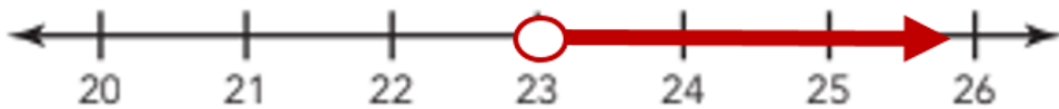
36

Penny solved an equation by subtracting 6 from each side of the equation and then dividing each side by 5. Which of these could have been the equation Penny solved?

- (A) $\frac{1}{5}x + 6 = 11$
- (B) $5x - 6 = 9$
- (C) $5x + 6 = 21$
- (D) $6x + 5 = 17$

37 Which graph represents the inequality $x \geq 23$?

(A) A



(B) B



(C) C



(D) D



38 Solve the following inequality.

$$9x - 2 > 43$$

Here, $x >$

39 Solve the inequality.

$$-2n < 30$$

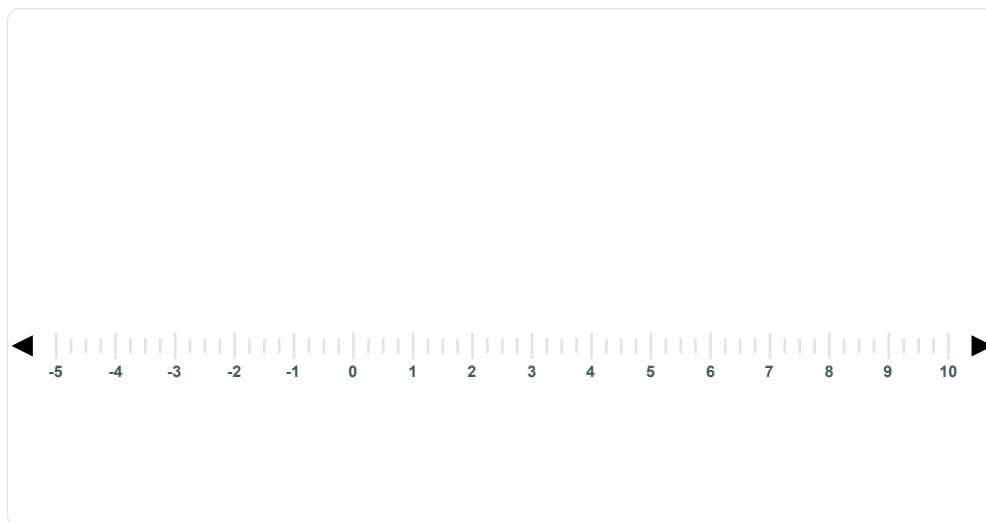
(A) $n < 15$

(B) $n > 15$

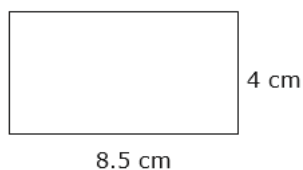
(C) $n < -15$

(D) $n > -15$

40

Graph $x \geq -2$.

41

Laurie will draw a scale model of the garden she wants to plant. Her scale will be $1\text{ cm} = 2.5\text{ ft}$.

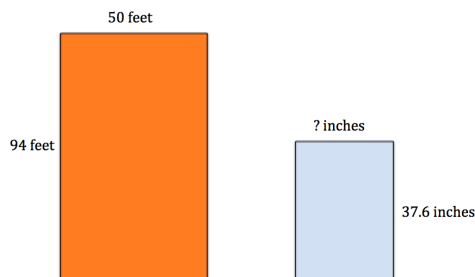
What will be the actual dimensions of Laurie's garden?

- (A) 1.6 ft by 3.4 ft
- (B) 4 ft by 34 ft
- (C) 8 ft by 34 ft
- (D) 10 ft by 21.25 ft

42

Thomas Jefferson School is building a new basketball court as seen below in orange.

The blueprint is missing a dimension.



Note: Drawing may not be to scale

What should the width of the blueprint be?

 inches

43

On a scale drawing of Oak Grove, two landmarks are shown 5 inches apart. These two places are actually separated by 35 miles. What is the map's scale? 1 inch = miles

Here is a picture of the Rose Bowl Stadium in Pasadena, CA.



Here are some copies of the picture. Select **all** the pictures that are scaled copies of the original picture.

A



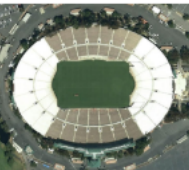
B



C



D



Graph the following points on the grid below.

A(4, 2)

B(-1, 3)

C(-5, -3)

D(3, 0)

46

Match the following items.

Line	●—●	<input type="text"/>
Plane	●—●	<input type="text"/>
Ray	●—●	<input type="text"/>
Line Segment	●—●	<input type="text"/>
Point	●—●	<input type="text"/>

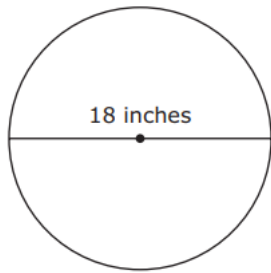
DRAG & DROP THE ANSWER

47

The perimeter of a square is 48 inches. What is the area, in square inches, of the square?

square inches





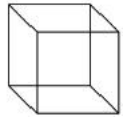
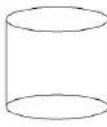
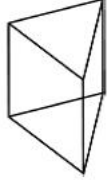

48 A mirror in the shape of a circle is shown in this diagram.



Based on the dimension in the diagram, what is the area, to the nearest tenth of a square inch, of the mirror? (Use 3.14 for π .)

- (A) 56.5
- (B) 254.3
- (C) 798.6
- (D) 1017.4

49 Match each solid with the cross-section that is formed if a horizontal slice is taken of the solid.

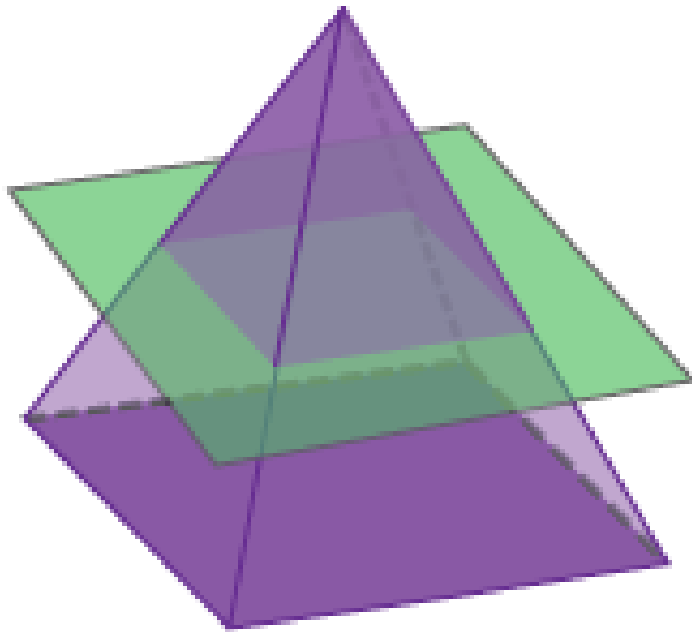
Solid			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

50

What is the shape of the cross section in the figure?

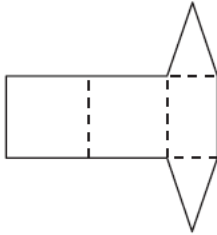
DRAG & DROP THE ANSWER

- 
- 
- 
- 



51

Name the solid figure formed by the net.



Answer:

a

- Triangular prism
- Rectangular prism
- Pentagonal prism
- Triangular Pyramid

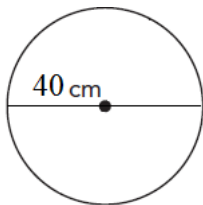
52

Supplementary angles are angles whose sums measure:

- (A) 90°
- (B) 180°
- (C) 360°
- (D) 45°

53

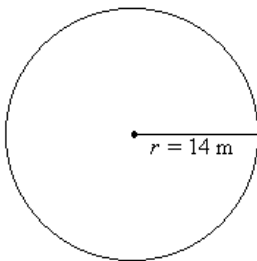
Find the circumference of the given circle given a diameter of 40 cm.

Use 3.14 as an approximation of π .

- (A) 120 cm
- (B) 100 cm
- (C) 125.6 cm
- (D) 40 cm

54

Find the area of the circle.

Use $\pi = 3.14$ and round your answer to the nearest hundredth.
 m^2

55

The diameter of a circle is 5 inches.

Find the length of its radius.

Answer: inches.

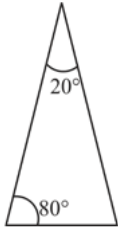
56

Match the following definitions with the correct vocabulary.

Radius	●—●	
Diameter	●—●	
Circumference	●—●	

DRAG & DROP THE ANSWER

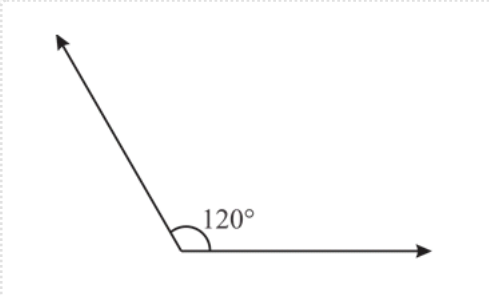
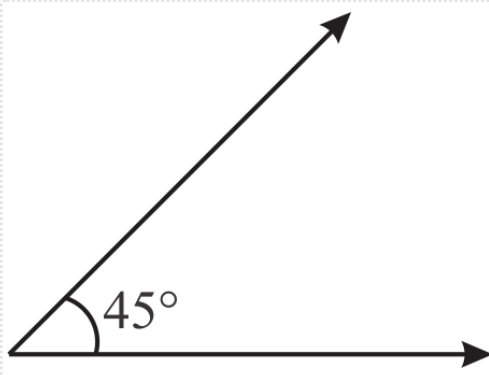
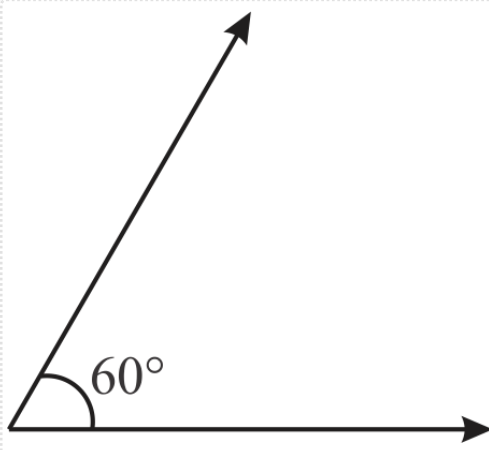
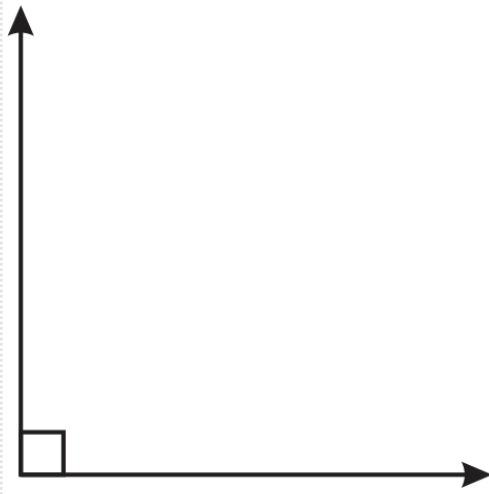
57 Find the missing angle.

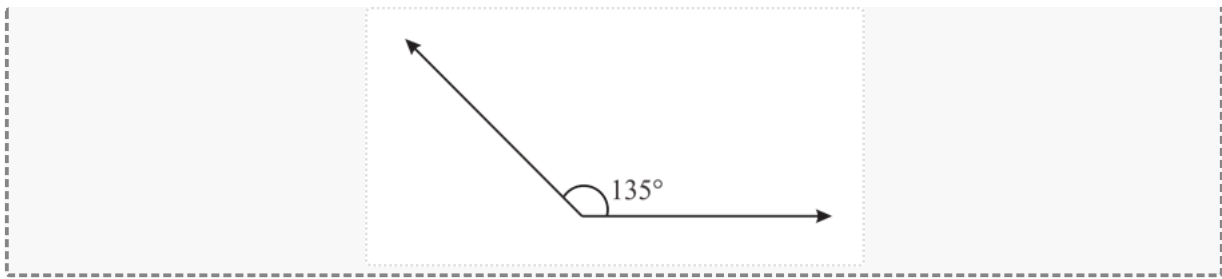


- (A) 100°
 - (B) 50°
 - (C) 80°
 - (D) 70°
-

Identify whether each angle is an acute, obtuse, or right angle.

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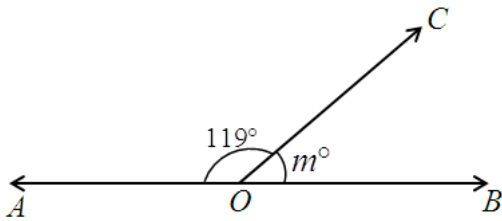
Acute angle

Obtuse angle

Right angle

59 $\angle AOC$ and $\angle COB$ are supplementary angles.

Find the value of m .



- (A) 61°
- (B) 30°
- (C) 45°
- (D) 41°

60

Match the following angles with their appropriate description.

Adjacent angles	●—●	
Complementary angles	●—●	
Supplementary angles	●—●	

DRAG & DROP THE ANSWER

Two angles whose sum is 90 degree

Two angles that have a common vertex and a shared side with no common interior points.

Two angles whose sum is 180 degree

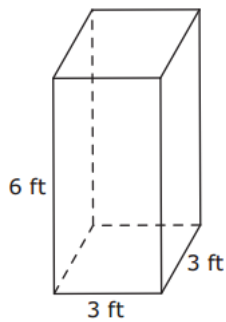
61

Find the area of a triangle with base of 10 inches and a height of 5 inches.

- (A) 100 square inches
- (B) 50 square inches
- (C) 25 square inches
- (D) 12.5 square inches

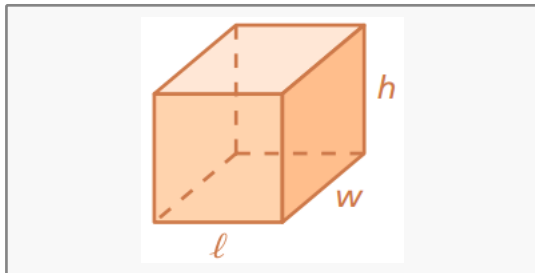
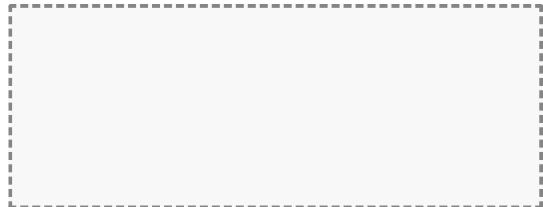
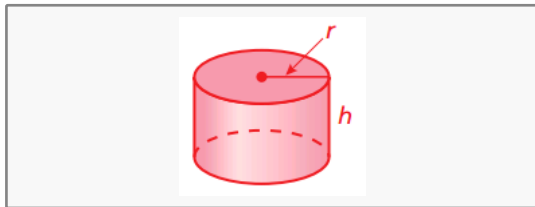
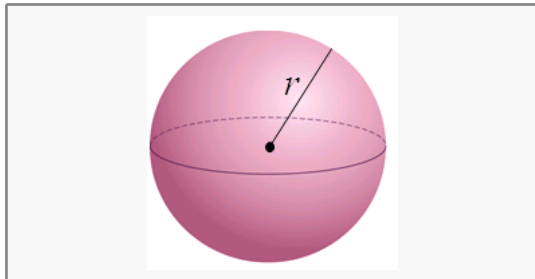
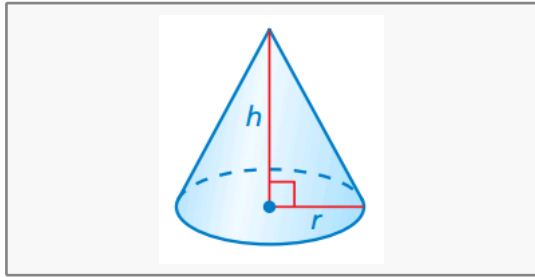
62

What is the surface area of the figure below?



- (A) 12 ft^2
- (B) 36 ft^2
- (C) 54 ft^2
- (D) 90 ft^2

Match each solid with their volume formula.



DRAG & DROP THE ANSWER

$$V = \frac{4}{3}\pi r^3$$

$$V = \pi r^2 h$$

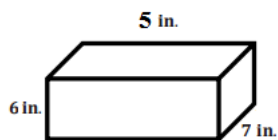
$$V = lwh$$

$$V = \frac{1}{3}\pi r^2 h$$

64

A rectangular box of rice is shown below.

How many cubic inches of rice can fit inside?



cubic inches

65

A principal wants to know if students at a particular high school are in favor of a new dress code at their school. The principal is not able to ask the opinion of every student at the school, so she needs to select an appropriate sample of the students to represent the high school.

Select which sample of students the principal should choose.

- (A) Students randomly selected from a list of all students at the school.
- (B) Students sitting at randomly selected tables in the library.
- (C) Students she selects from the hallway between classes.
- (D) Students selected by the teachers.

66

Match each term with the spinner that best illustrates its meaning.

	unfair game	fair game
	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>

67

Josephine owns a diner that is open every day for breakfast, lunch, and dinner. She offers a regular menu and a menu with daily specials. She wanted to estimate the percentage of her customers who order specials. She selected a random sample of 50 customers who had lunch at her diner during a three-month period. She determined that 28% of these customers ordered from the menu with specials.

Which statement about Josephine's sample is true?

- (A) The sample is the percentage of customers who order daily specials.
- (B) The sample might not be representative of the population because it only included lunch customers.
- (C) The sample shows that exactly 28% of Josephine's customers ordered daily specials.
- (D) No generalizations can be made from this sample, because the sample size of 50 is too small.

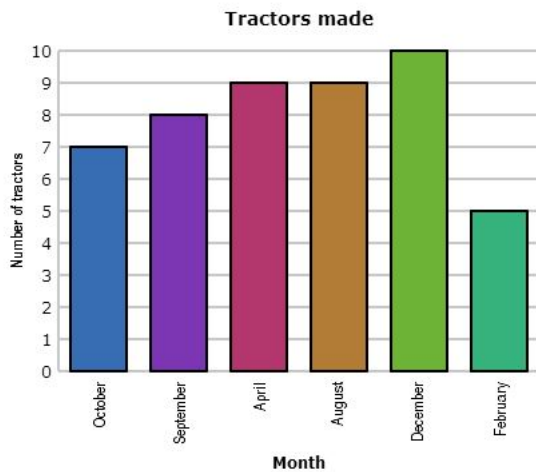
68

Classify the scenarios mentioned in the first column as biased sample or random sample.

Scenarios	Random Sample	Biased Sample
Sam asked 15 of his friends what they thought about the pizza they just had.	<input type="radio"/>	<input type="radio"/>
Dorothy surveyed the first 20 people to use a new website.	<input type="radio"/>	<input type="radio"/>
Chris threw some identically shaped marbles, then collected 15 marbles from the carpet.	<input type="radio"/>	<input type="radio"/>

69

A farm equipment company kept a record of the number of tractors made each month.



What is the mean of the numbers?

Mean =

70

True or False:

The "range" of values is the difference between the largest and smallest values.

- (A) True
(B) False

71

The _____ uses multiplication of the number of ways each event in an experiment can occur to find the number of possible outcomes in a sample space.

- (A) relative frequency
(B) compound events
(C) random
(D) Fundamental Counting Principle

72

Find the mode, median and mean of the following data and match them with their appropriate result provided below.

3, 12, 11, 7, 5, 5, 6, 4, 10

Mode	●	●	<input type="text"/>
Median	●	●	<input type="text"/>
Mean	●	●	<input type="text"/>

DRAG & DROP THE ANSWER

7

8

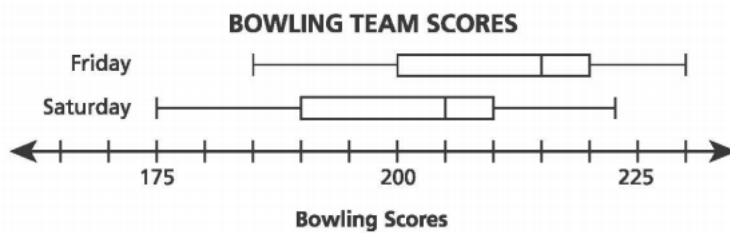
5

6

4

73

A bowling team participates in a two-day tournament and records the scores for each team member on both days. The scores for both days are represented by the box plots below.

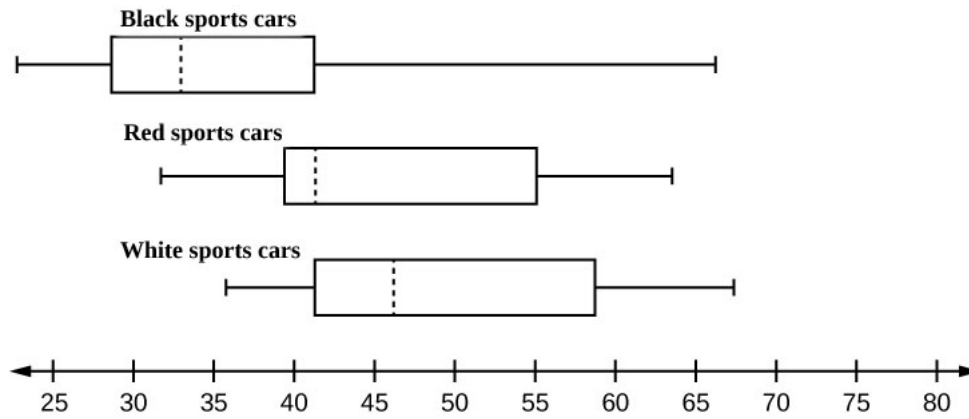


Which conclusion can be drawn from the box plots?

- (A) The scores on Friday and the scores on Saturday have the same median and interquartile range.
- (B) The scores on Friday have a greater median and a greater interquartile range than the scores on Saturday.
- (C) The scores on Friday have a greater interquartile range than the scores on Saturday, but both data sets have the same median.
- (D) The scores on Friday have a greater median than the scores on Saturday, but both data sets have the same interquartile range.

74

A survey was conducted of 130 purchasers of new black sports cars, 130 purchasers of new red sports cars, and 130 purchasers of new white sports cars. In it, people were asked the age they were when they purchased their car. The following box plots display the results.



Which group is most likely to have an outlier?

- (A) Black Sports Cars
- (B) Red Sports Cars
- (C) White Sports Cars
- (D) All Sports Cars

75

True or False:

The mode of the following data is 5.

0, 2, 2, 5, 2, 5, 0

- (A) True
- (B) False

76

The employees at Ari's Construction monitored the number of cracked window panes in each shipment they received.

Cracked window panes per shipment

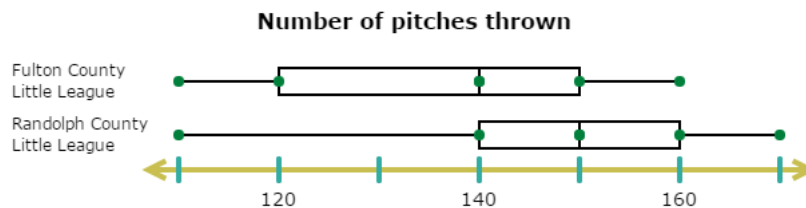
Stem	Leaf
3	0 5 8
4	4 5 8
5	4 5 6
6	2 4 6
7	1 4
8	1 2 7 7
9	0 0 0

How many shipments had at least 53 cracked window panes but less than 80 cracked window panes?

Answer:

77

A sports reporter for the local paper keeps stats at little league baseball games. Among them, he tracked the number of pitches thrown at all of Fulton County Little League's games and Randolph County Little League's games. The box-and-whisker plots show the results.



Which statement is supported by the data?

- (A) Randolph County has better pitchers.
- (B) Fulton County has fewer pitchers
- (C) The median number of pitches thrown by Randolph pitchers is higher than that of Fulton.
- (D) Randolph County will win more games.

78

Choose the median of the following data.
4, 9, 9, 8, 10

- (A) 4
- (B) 9
- (C) 8
- (D) 10

79

You spin the spinner below once.

What is the $P(\text{getting a number less than 5})$?



- (A) 1
- (B) $\frac{3}{4}$
- (C) $\frac{1}{2}$
- (D) 2

80 If the probability that it will rain tomorrow is $\frac{1}{5}$, what is the probability that it will not rain tomorrow?

- (A) $\frac{4}{5}$
- (B) $\frac{3}{5}$
- (C) $\frac{2}{5}$
- (D) $\frac{2}{10}$

81 When a normal six-sided die is rolled, what is the probability of getting a 7?

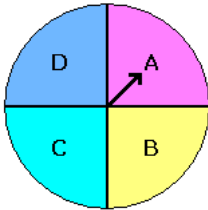
- (A) 0
- (B) $\frac{1}{2}$
- (C) $\frac{6}{7}$
- (D) $\frac{7}{6}$

82 A grocery store has 12 cartons of yogurt for sale, of which 3 are raspberry.

What is the probability that a randomly selected carton of yogurt will be raspberry?

- (A) $\frac{1}{2}$
- (B) $\frac{1}{4}$
- (C) $\frac{1}{3}$
- (D) $\frac{4}{5}$

83 If the spinner shown is spun 40 times, predict the number of times the spinner would land on Section B.



- (A) 11
- (B) 10
- (C) 5
- (D) 4

84 Can the probability of an event be greater than 1?

- (A) True
- (B) False

85 Alfie tossed a paper cup in the air 350 times and recorded whether it landed right side up, upside down, or on its side.

The results of the experiment are shown in the table below.

PAPER CUP EXPERIMENT

Result of Toss	Number of Times
Landed right side up	88
Landed upside down	52
Landed on its side	210

If Alfie tosses the paper cup 90 more times, what is the expected number of times that the cup will land on its side?

- (A) 30
- (B) 48
- (C) 54
- (D) 60

86 A storeowner made a list of the number of greeting cards sold last month. The store sold 167 thank-you cards, 285 birthday cards, and 56 blank cards. Based on these data, which number is closest to the probability that the next customer will buy a blank card?

- (A) 0.11
- (B) 0.33
- (C) 0.56
- (D) 0.89

87 A hat contains 3 blue and 5 black tickets.

If one ticket is chosen at random from the hat, **what is the probability that it is blue?**

- (A) $\frac{1}{2}$
 - (B) $\frac{3}{5}$
 - (C) 3
 - (D) $\frac{3}{8}$
-

88

A computer program selects blue, red, or green as the background color each time the program is used.

- The program was used 45 times on the same computer in one week.
- Of those 45 times, a blue background appeared 12 times and a red background appeared 21 times.

Based on this information, which statement about the likelihood of the green background appearing the next time the program is used is true?

- (A) Green is just as likely as red or blue to appear.
- (B) Green is just as likely as blue to appear, but not as likely as red.
- (C) Green is not as likely as red or blue to appear.
- (D) Green is not as likely as blue to appear, but is as likely as red.

89

A dartboard has 20 equal sections, of which 10 are orange.

What is the probability that a dart will land in an orange section?

- (A) 0.2
- (B) 0.25
- (C) 1.0
- (D) 0.5

90

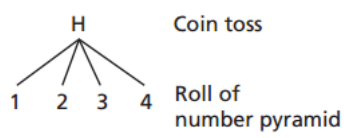
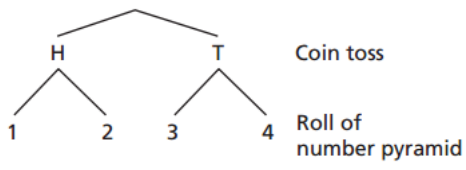
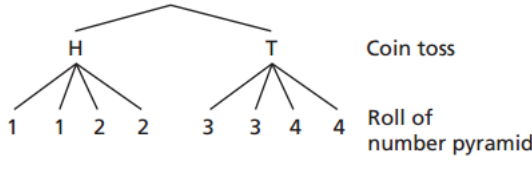
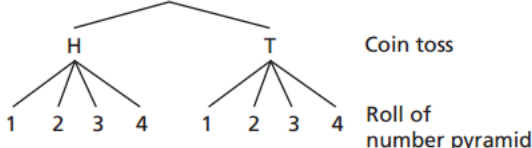
If you roll a numbered cube labelled 1 – 6 once, how likely is it that you would randomly roll a number less than 5?

Answer:

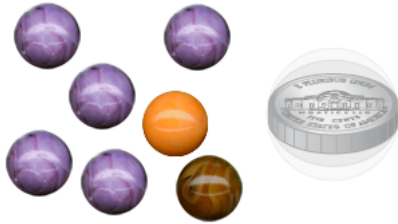
Note: Write your answer in simplest fraction form.

91

Which tree diagram shows all of the possible outcomes for tossing a coin and rolling a fair number pyramid that has four sides labeled 1 through 4?

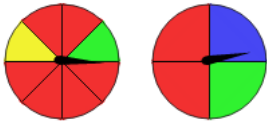
- (A)
 
- (B)
 
- (C)
 
- (D)
 

92 What is the probability of picking an orange marble and flipping tails?



- (A) $\frac{1}{7}$
- (B) $\frac{8}{14}$
- (C) $\frac{2}{14}$
- (D) $\frac{1}{14}$

93 What is the probability of spinning green on the first spinner and blue on the second spinner?



Answer:

Note: Write your answer as a simplified fraction.

94 How many possible outcomes are possible if you choose from 6 ice cream flavors, 3 different sizes of scoops, 2 toppings, and a waffle cone or a cup?

- (A) 36
- (B) 24
- (C) 18
- (D) 72

95 $2\frac{3}{4} - 1\frac{1}{6} =$

96 David made $\frac{4}{3}$ of a quart of fruit juice.

Each mug he has holds $\frac{1}{3}$ of a quart.

How many mugs will David be able to fill?

Answer: mugs.

97

Graph the following points on the coordinate plane.

Point A = $(-4, 0)$ Point B = $(-10, 3)$ Point C = $(-10, -3)$

98

Classify the coordinates given below into different quadrants according to their location.

DRAG & DROP THE ANSWER

 $(-3, 7)$ $(-2, -2)$ $(3, -7)$ $(1, 8)$ $(-6, -11)$ $(-6, 4)$

Quadrant I

Quadrant II

Quadrant III

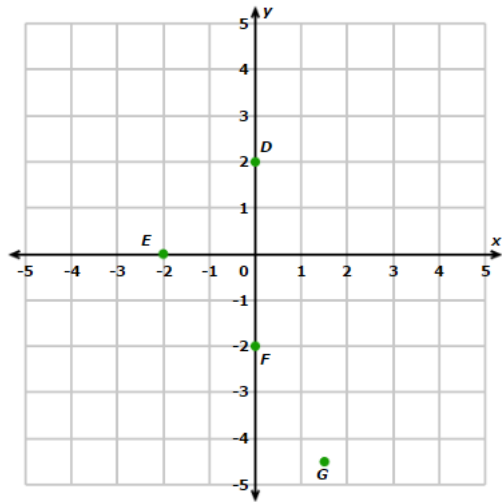
Quadrant IV

99

The points $(3, 9)$ and $(-3, -9)$ lie in which quadrants?

- (A) Quadrant I and II
- (B) Quadrant I and III
- (C) Quadrant II and III
- (D) Quadrant III and IV

- (a) Consider the following graph and choose the point which is at $(-2, 0)$.

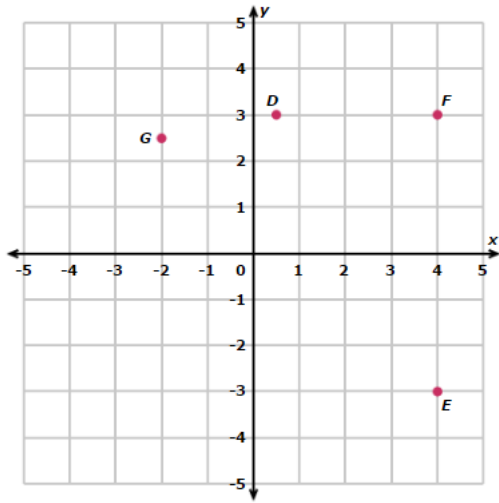


- (A) D
 - (B) E
 - (C) F
 - (D) G
-

(b)

Part B

Consider the following graph and write the coordinates of point F in the empty box.



Answer:

a

a

- 4,-3
- 4,3
- 3,4
- 3,4

