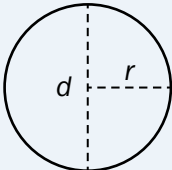


Grade 7 Math Formula Sheet

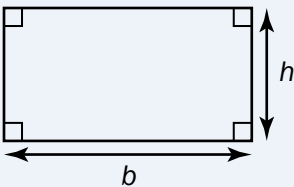
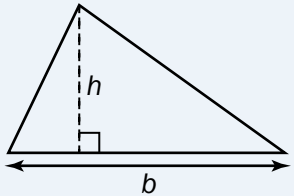
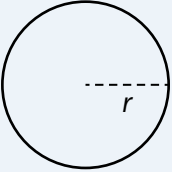
Geometry

Perimeter: the distance around a polygon

Circumference: the distance around a circle

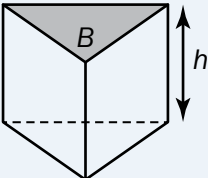
Circle		$C = 2\pi r$ or $C = \pi d$ $\pi \approx 3.14$
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Area: the two-dimensional space inside of a plane figure

Rectangle		$A = bh$
Triangle		$A = \frac{1}{2}bh$
Circle		$A = \pi r^2$ $\pi \approx 3.14$

Surface Area: the sum of the areas of the flat surfaces (called faces) of a three-dimensional figure

Volume: the amount of space inside of a three-dimensional figure

Right Prism		$V = Bh$ $B = \text{area of the base}$
-------------	---	---

Statistics

Mean (average): the sum of all the values in a data set divided by the number of values

Interquartile Range (IQR): the difference between the upper quartile (Q_3) and lower quartile (Q_1) of a data set

Cut along the dotted line.

Section 1, Part A

You may not use a calculator on this part of the test.

1. Which equation is true?

A. $\frac{4}{-9} = \frac{4}{-9}$

B. $\frac{4}{-9} = \frac{2}{-3}$

C. $\frac{4}{-9} = \frac{4}{9}$

D. $\frac{4}{-9} = \frac{2}{3}$

2. What is the value of $-\frac{1}{6} + \frac{2}{3}\left(9 - \frac{3}{4}\right) - \frac{1}{2}$?

A. $\frac{62}{12}$

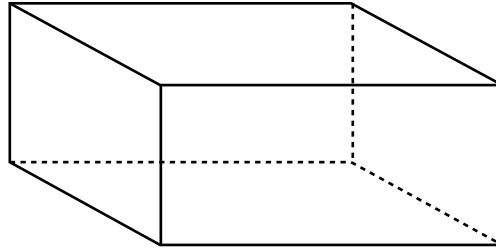
B. $\frac{58}{12}$

C. $\frac{55}{12}$

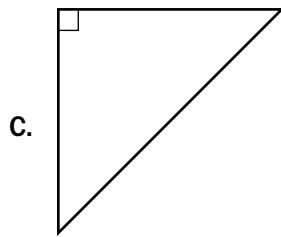
D. $\frac{3}{12}$

Go On

3. A rectangular prism is shown below.



4. Draw a plane to slice the prism diagonally from the top front edge to the back bottom edge. Which figure was formed by the intersection of the prism and the plane?



4. Which expression has the same value as $-\frac{3}{2} - \left(2 - \frac{3}{8}\right) + \frac{3}{2}$?

A. $\left(\frac{3}{2} - \frac{3}{2}\right) - 2 + \frac{3}{8}$

B. $\left(\frac{3}{2} - \frac{3}{2}\right) + \left(2 + \frac{3}{8}\right)$

C. $-\left(\frac{3}{2} + \frac{3}{2}\right) - \left(2 - \frac{3}{8}\right)$

D. $\left(-\frac{3}{2} + \frac{3}{2}\right) + \left(2 + \frac{3}{8}\right)$

5. Which fraction equals $\frac{8}{-16}$?

A. 2

B. -2

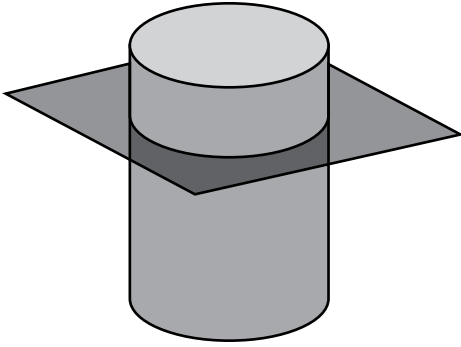
C. $\frac{1}{2}$

D. $-\frac{1}{2}$

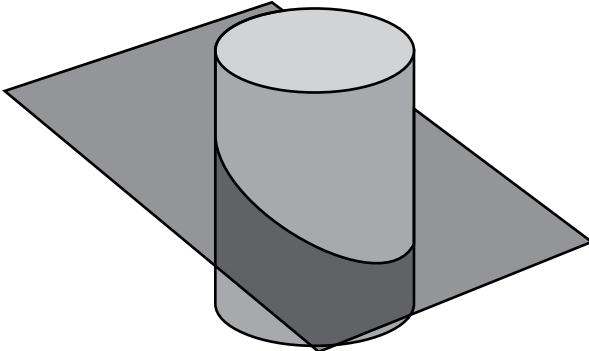
Go On

6. Which cross-section of a cylinder with a plane is a rectangle?

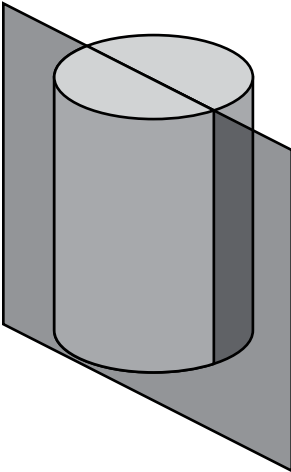
A.



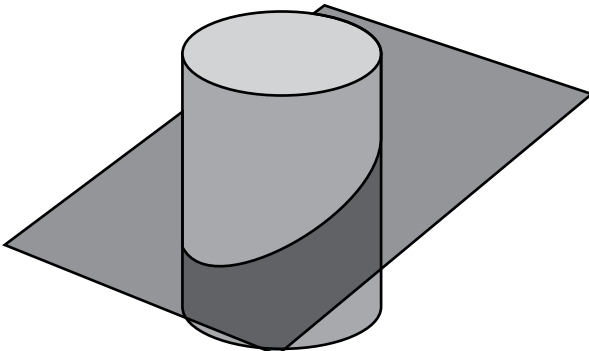
B.



C.



D.



7. Which shows $\frac{3}{16}$ written as a decimal?

- A. 0.1875
- B. $0.187\overline{5}$
- C. 0.316
- D. $0.31\overline{6}$

8. Kathy takes her cat to a veterinarian every year for a check-up. Last year, the difference in the cat's weight from the year before was -1.56 pounds. This year, the difference in its weight from last year is 0.73 pounds.

What is the difference in the cat's weight from 2 years ago?

- A. -2.29 pounds
- B. -2.19 pounds
- C. -0.93 pound
- D. -0.83 pound

STOP

Section 1, Part B

You may use a calculator on this part of the test.

9. What is the result of adding $-2.9a + 6.8$ and $4.4a - 7.3$?
- A. $7.3a + 14.1$
 - B. $2.5a - 1.5$
 - C. $1.5a + 0.5$
 - D. $1.5a - 0.5$
10. Lien jogged $\frac{2}{3}$ of a mile in $\frac{1}{12}$ of an hour. What was her speed in miles per hour?
- A. $\frac{1}{18}$ mph
 - B. $\frac{1}{5}$ mph
 - C. 4 mph
 - D. 8 mph
11. Coach Taylor compares the number of points scored by the basketball team per game in 2015 and 2016. The data are displayed in the table below.

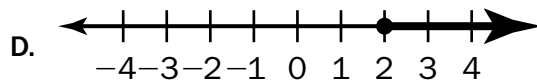
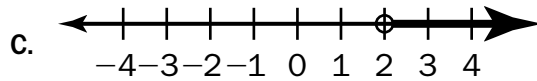
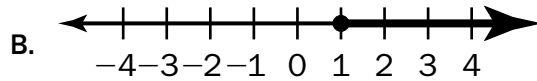
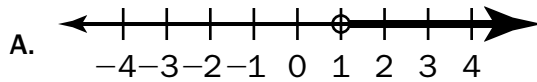
Basketball Team Points

Year	Points Scored Per Game
2015	32, 33, 35, 36, 37, 40, 42, 44, 44, 45, 50
2016	50, 51, 53, 53, 54, 58, 58, 60, 62, 65, 67

What is the difference between the median number of points scored per game in 2016 over 2015 as a multiple of the interquartile range (IQR)?

- A. three times the IQR of 2015
- B. twice the IQR of 2015
- C. nine times the IQR of 2015
- D. eighteen times the IQR of 2015

12. When a snowstorm hit the town of Clarkesville, there were already 4 inches of snow on the ground. The storm lasted for 2 hours, and by the time it was over, there were at least 6 inches of snow on the ground. Which number line shows the solution set for the mean number of inches of snow per hour that could have fallen during the storm?



13. As part of a group exercise, four students each randomly selected 3 cards with angle measures written on them. The table shows the results.

Cards Selected

Name	Angle Measures
Aisha	$100^\circ, 90^\circ, 170^\circ$
Aella	$60^\circ, 25^\circ, 95^\circ$
Andrew	$35^\circ, 35^\circ, 35^\circ$
Ah Lam	$90^\circ, 60^\circ, 45^\circ$

Which student selected angle measures that could form a triangle?

- A. Aella
- B. Aisha
- C. Ah Lam
- D. Andrew

14. The table shows the diameters in inches of a random sample of 10 tomatoes sold by two supermarket chains.

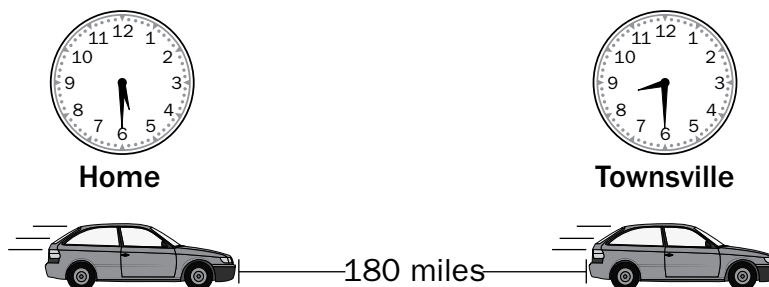
Tomatoes

	Diameters (inches)
Supermarket Chain A	3.2, 2.7, 2.9, 2.9, 3.0, 2.5, 2.7, 3.1, 2.8, 2.5
Supermarket Chain B	2.6, 3.0, 2.2, 2.4, 2.9, 2.5, 2.1, 2.3, 2.1, 2.7

Which statement is **MOST LIKELY** correct?

- A. On average, the tomatoes sold by supermarket chain A have a diameter 0.35 inch less than those sold by supermarket chain B.
- B. On average, the tomatoes sold by supermarket chain A have a diameter 0.18 inch less than those sold by supermarket chain B.
- C. On average, the tomatoes sold by supermarket chain A have a diameter 0.18 inch more than those sold by supermarket chain B.
- D. On average, the tomatoes sold by supermarket chain A have a diameter 0.35 inch more than those sold by supermarket chain B.

15. Adelia drove from her house to Townsville one evening. The diagram below shows the time Adelia left home, the time she arrived in Townsville, and the distance she drove.



What was Adelia's average speed?

- A. 75 miles per hour
- B. 60 miles per hour
- C. 45 miles per hour
- D. 30 miles per hour

16. Rose purchased 2 packs of red pens, 4 packs of black pens, and 3 packs of blue pens. The cost of each pack of pens was \$2.50. The expression $\$2.50 \times 2 + \$2.50 \times 4 + \$2.50 \times 3$ represents the total cost of the pens. Which expression also represents the total cost of the pens?

- A. $\$2.50 \times 2 \times 4 \times 3$
- B. $\$2.50 \times (2 + 4 + 3)$
- C. $\$2.50 + (2 \times 4 \times 3)$
- D. $\$2.50 + 2 + 4 + 3$

17. Three of the 20 coins in Mischa's piggy bank are pennies. Mischa shakes a coin out of her piggy bank.

Which word BEST describes the likelihood of Mischa shaking out a penny?

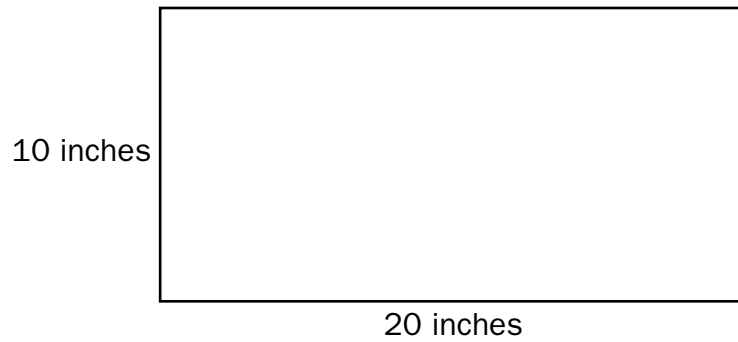
- A. unlikely
- B. likely
- C. certain
- D. impossible

18. A painter mixes 6 parts red paint and 8 parts yellow paint to make dark orange paint. Which equation can the painter use to calculate the amount of red paint, R , that is needed to mix with a given amount of yellow paint, Y ?

- A. $R = \frac{6}{8} + Y$
- B. $R = \frac{6}{8} - Y$
- C. $R = \frac{3}{4}Y$
- D. $R = \frac{4}{3}Y$

Go On

19. A scale drawing of a rectangular playground has a length of 20 inches and a width of 10 inches as shown. The scale is 1 inch = 15 feet.



Part A: What is the area of the scale drawing of the playground?

Part B: What is the length and the width of the actual playground?

Part C: What is the area of the actual playground?

Part D: Write a scale that relates the area of the drawing to the area of the actual playground. Show or explain your work and write your answer in the space provided.

20. Jade invested in the stock market. The weekly change in the value of her stock, in dollars, over 4 weeks was $+23.65$, -22.20 , -12.75 , and $+5.98$.

What is the average weekly change in value of her stock, in dollars?

Show or explain your work and write your answer in the space provided.

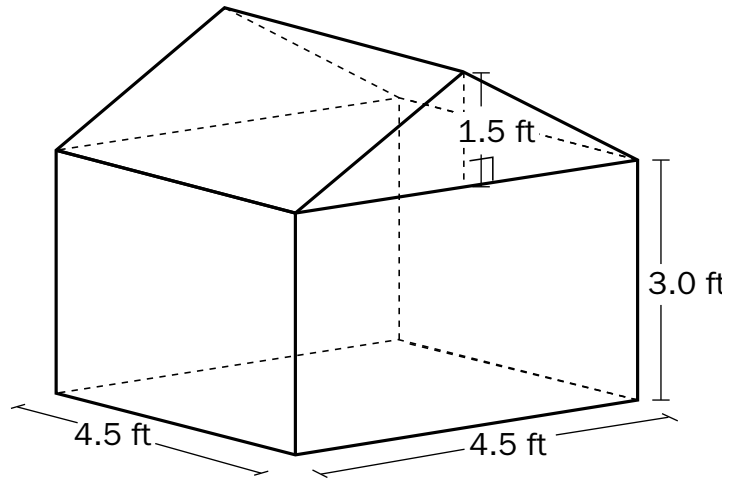
STOP

Section 2

You may use a calculator on this part of the test.

21. Richard mows $\frac{1}{3}$ of his yard in $\frac{1}{2}$ hour. At that same rate, how much of his yard would Richard mow in 1 hour?
- A. $\frac{1}{6}$
 - B. $\frac{2}{5}$
 - C. $\frac{2}{3}$
 - D. $\frac{3}{2}$
22. Chris used 45 feet of fencing to enclose a circular garden. What is the approximate radius of the garden? Use 3.14 for π .
- A. 51.27 ft
 - B. 14.32 ft
 - C. 7.17 ft
 - D. 3.78 ft
23. Noah's school is located 2.5 miles from his house. After school, he goes to hockey practice at an ice rink that is an additional 1.2 miles from his school. What is the distance between the ice rink and Noah's house?
- A. 1.2 miles
 - B. 1.3 miles
 - C. 2.1 miles
 - D. 3.7 miles

24. The diagram below shows a doghouse that Calvino built.



What is the volume of the doghouse?

- A. 15.1875 ft^3
- B. 30.375 ft^3
- C. 60.75 ft^3
- D. 75.9375 ft^3

Go On

25. Greta learned that about 10% of people are left-handed. She ran 10 different simulations using random digits to find the probability that there is a left-handed person in a group of 5 randomly selected people. In the table of Greta's results below, 0 represents a left-handed person and 1 through 9 represent a right-handed person. Each row represents one simulation of 5 people.

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

Based on Greta's simulations, what is the probability that in a group of 5 people, at least 1 person will be left-handed?

- A. 6%
- B. 20%
- C. 30%
- D. 60%

26. The perimeter of the soccer field at Beth's school is 280 meters. Its length is 95 meters. What is its width?
- A. 2.95 m
 - B. 45 m
 - C. 90 m
 - D. 185 m
27. A proportional relationship is represented by the equation $2x = 18y$. If $y = kx$, where k is the constant of proportionality, what is the value of k ?
- A. 9
 - B. 2
 - C. $\frac{1}{2}$
 - D. $\frac{1}{9}$
28. In Christopher's backyard there is a round pool with a diameter of 24 feet. He decides to paint the bottom of the pool. What is the area that he will paint? Use 3.14 for π .
- A. 75.36 ft²
 - B. 150.72 ft²
 - C. 452.16 ft²
 - D. 1,808.64 ft²

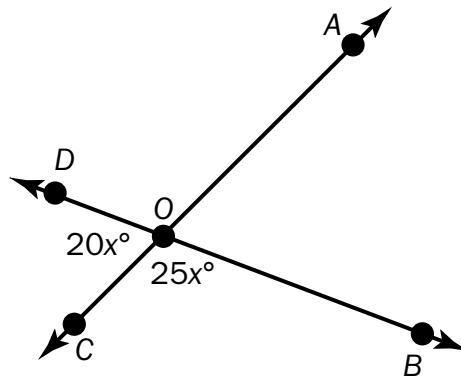
29. The temperature in Chicago at 8 AM was -3°F . By 2 PM, the temperature had increased by 3°F . What was the temperature at 2 PM?

- A. -6°F
- B. 0°F
- C. 3°F
- D. 6°F

30. Tamal wants to buy a skateboard that costs \$39.99. He has a coupon for 25% off, and the store charges 5% tax on the sale price. How much does Tamal pay for the skateboard?

- A. \$10.50
- B. \$28.49
- C. \$31.49
- D. \$44.99

31. Lines \overline{AC} and \overline{BD} intersect at O as shown.



What is the measure of $\angle BOC$?

- A. 4°
- B. 45°
- C. 80°
- D. 100°

32. Dr. Chen is conducting a survey to learn about the fruits and vegetables that people in her city eat. She surveys a sample of the population. In order to get unbiased results, which statement about Dr. Chen's survey sample must be true?

- A. The sample must include randomly selected people.
- B. The sample must include at least 100 people.
- C. The sample must include dieticians.
- D. The sample includes only the people that are easiest to talk to.

33. Inma's pet store sells fantail goldfish and comet goldfish. Each aquarium of fantail goldfish has 9 fish and each aquarium of comet goldfish has 13 fish. There are a total of 145 of these two types of goldfish in the store, with 6 aquariums of fantail goldfish. How many aquariums of comet goldfish are there?

- A. 3
- B. 5
- C. 6
- D. 7

34. Abbas recorded the types of drinks some randomly-selected people purchased at a convenience store over two days.

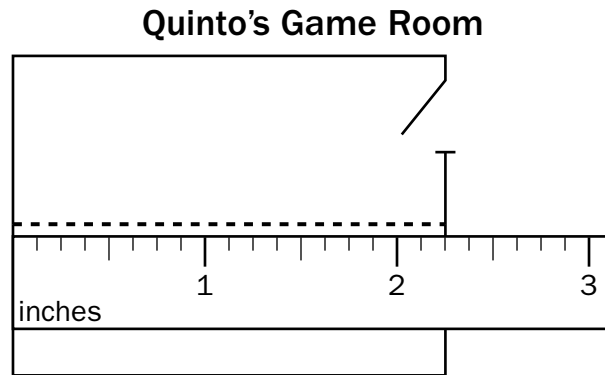
Drinks Purchased

	Sports Drinks	Other Beverages
Day 1	30	20
Day 2	28	22

Which statement is BEST supported by the data Abbas gathered?

- A. On a day when 150 drinks are sold, exactly 60 will be sports drinks.
- B. On a day when 150 drinks are sold, about 60 will be sports drinks.
- C. On a day when 200 drinks are sold, exactly 120 will be sports drinks.
- D. On a day when 200 drinks are sold, about 120 will be sports drinks.

35. The figure below is a scale drawing of Quinto's game room. The scale used to create the drawing was $\frac{1}{2}$ inch = 4 feet.



If the scale had been $\frac{3}{4}$ inch = 4 feet, how many inches longer would the scale drawing of Quinto's game room be?

- A. $\frac{7}{8}$ inch
 - B. $1\frac{1}{8}$ inches
 - C. $3\frac{1}{8}$ inches
 - D. $3\frac{3}{8}$ inches
36. The bookcase in Ms. Silva's English classroom has 120 books. Of the books, 15% are dramas, $\frac{2}{3}$ are mysteries, and the remainder are poetry. How many are poetry books?
- A. 18
 - B. 22
 - C. 40
 - D. 80

37. Mr. Bedi has 30 students in his class. He writes each student's name on a piece of paper, and puts them into a bag. Each day he draws one name out of the bag and has that student read the announcements. Mr. Bedi then puts the piece of paper back in the bag. About how many times should Mr. Bedi expect to draw each student's name in 180 days?
- A. 6
 - B. 30
 - C. 60
 - D. 120

38. Which table shows a proportional relationship between x and y ?

A.

x	2	4	6	8
y	4	8	12	16

B.

x	3	6	9	12
y	9	12	15	18

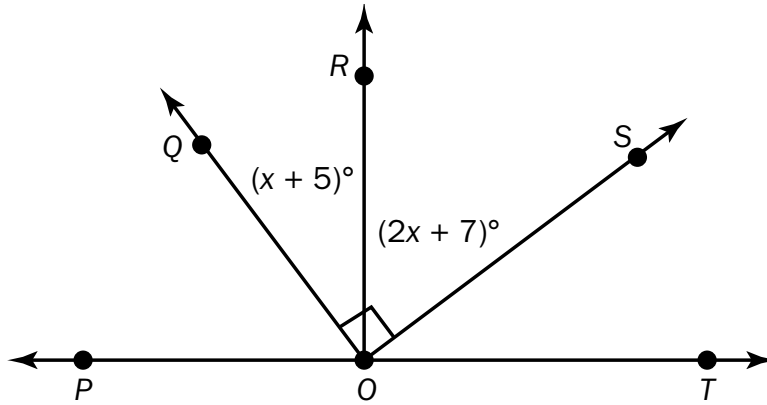
C.

x	5	10	15	20
y	15	20	25	30

D.

x	12	24	36	48
y	2	14	26	38

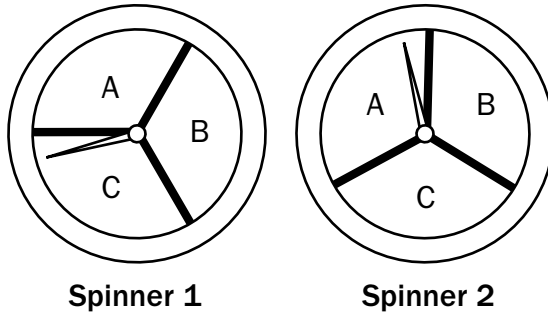
39. The figure below shows several rays that share a common endpoint.



Suppose that the measure of $\angle QOR$ had instead been represented as $(4a + 3)^\circ$. Which of these could have represented the measure of $\angle ROS$?

- A. $(8a + 3)^\circ$
- B. $(8a + 5)^\circ$
- C. $(8a + 7)^\circ$
- D. $(8a + 9)^\circ$

40. Na'ilah is spinning 2 fair spinners.



Which table shows all the possible outcomes of spinning both spinners?

A.

Spinner 1	A	B	C	C	A	B	B	C	A
Spinner 2	B	C	A	A	B	C	C	A	B

B.

Spinner 1	A	A	B	B	C	C
Spinner 2	B	C	A	C	A	B

C.

Spinner 1	A	B	C	A	B	C	A	B	C
Spinner 2	A	A	A	B	B	B	C	C	C

D.

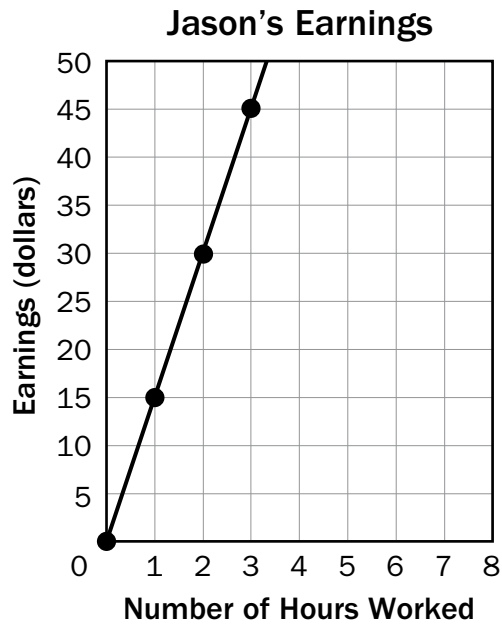
Spinner 1	A	B	C
Spinner 2	A	B	C

41. Ms. Nelson needs to purchase 35 pieces of poster board for her art class. She spends a total of \$27.30. Which equation can be used to find the cost of each piece of poster board, x ?

- A. $x + 35 = 27.30$
- B. $27.30x = 35$
- C. $27.30 + x = 35$
- D. $35x = 27.30$

Go On

42. The graph below shows Jason's earnings based on the number of hours that he works.



Part A: What point on the graph represents Jason's hourly pay as a unit rate?

- A. (0, 0)
- B. (1, 15)
- C. (2, 30)
- D. (3, 45)

Part B: What point on the graph represents the fact that if Jason does not work, he does not get paid?

- A. (0, 0)
- B. (1, 15)
- C. (2, 30)
- D. (3, 45)

43. Each morning, Danai buys breakfast on her way to work. In the past thirty days, she bought a bagel on 6 days, a banana on 12 days, a doughnut on 3 days, and an orange on 9 days. If she bought one item per day, what is the probability that she bought either a banana or an orange? Show or explain your work and write your answer in the space provided.

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STOP

Name _____

Teacher _____ Grade _____

Assessment 1

Section 1, Part A

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)

Section 1, Part B

9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D)
12. (A) (B) (C) (D)
13. (A) (B) (C) (D)
14. (A) (B) (C) (D)
15. (A) (B) (C) (D)
16. (A) (B) (C) (D)
17. (A) (B) (C) (D)
18. (A) (B) (C) (D)
19. See page 10.
20. See page 11.

Section 2

21. (A) (B) (C) (D)
22. (A) (B) (C) (D)
23. (A) (B) (C) (D)
24. (A) (B) (C) (D)
25. (A) (B) (C) (D)
26. (A) (B) (C) (D)
27. (A) (B) (C) (D)
28. (A) (B) (C) (D)
29. (A) (B) (C) (D)
30. (A) (B) (C) (D)
31. (A) (B) (C) (D)
32. (A) (B) (C) (D)
33. (A) (B) (C) (D)
34. (A) (B) (C) (D)
35. (A) (B) (C) (D)
36. (A) (B) (C) (D)
37. (A) (B) (C) (D)
38. (A) (B) (C) (D)
39. (A) (B) (C) (D)
40. (A) (B) (C) (D)
41. (A) (B) (C) (D)
- 42A. (A) (B) (C) (D)
- 42B. (A) (B) (C) (D)
43. See page 23.

TEACHER USE ONLY

19. (0) (1) (2) (3) (4)
20. (0) (1) (2)
43. (0) (1) (2)

Cut along the dotted line.