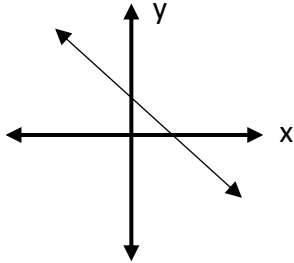Name _____

Date _____ Pd _____

7ᵗʰ Grade Math Final Study Guide

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.

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1. Which of the following represents a proportional relationship between x and y?
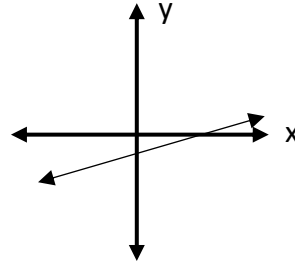
A.

B.

X	Y
2	7
6	19
10	31
14	43

C.

D.

X	Y
-1	-.5
-3	-1.5
-5	-2.5
-7	-3.5

---

2. Teresa is loading her car with boxes that each weigh $4\frac{3}{4}$ pounds. If Teresa loads 9 of these boxes, find the combined weight of the boxes.

A. $40\frac{1}{4}$ pounds

B. $13\frac{3}{4}$ pounds

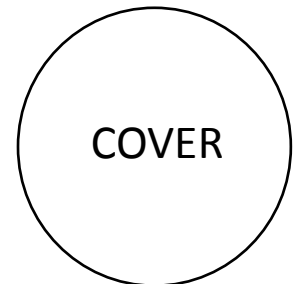C. $36\frac{3}{4}$ pounds

D. $42\frac{3}{4}$ pounds

3. The top view of Jake's circular pool is shown below. If Jake has a circular pool cover that has a diameter of 26 feet, find the area of the pool cover.

A. 530.66 ft²

B. 2,122.64 ft²

C. 163.28 ft²

D. 81.64 ft²

---

4. Kaleigh bought a large popcorn at the movie theater for $6.25. Anytime Kaleigh brings the bowl back to the theater, she can purchase popcorn refills for $0.75. If Kaleigh has spent $10 so far, including the original purchase of the large popcorn, how many refills has she purchased?

A. 13

B. 8

C. 5

D. 6

5. Last week, Jerry's house used 350 kilowatts of energy. If this week his house uses 420 kilowatts of energy, find the percentage of increase of energy used.
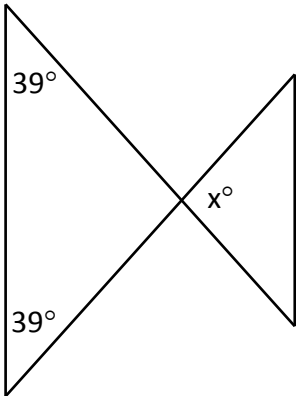
A. 70%

B. 16.7%

C. 20%

D. 35%

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.

6. The data from two random samples where 300 students were asked about their favorite zoo animal is shown. What percentage of students chose the lion as their favorite animal?

A. 60%

B. 15%

C. 5%

D. 20%

ANIMAL	PENGUIN	MONKEY	LION	GIRAFFE	TOTAL
# STUDENTS	80	130	60	30	300

7. Find the measure of angle x.

39°

x°

39°

A. 78°

B. 102°

C. 39°

D. 92°

8. Norah needs $5\frac{1}{2}$ cups of flour for a cookie recipe she is making for a large party. So far she has scooped $1\frac{1}{2}$ cups and $1\frac{3}{4}$ cups of flour into her bowl. How many more cups of flour does she need?

A. $3\frac{1}{4}$
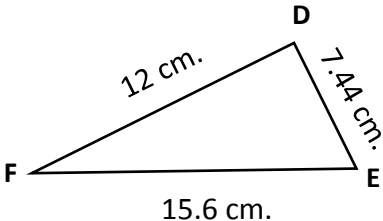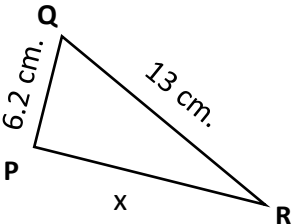
B. $2\frac{3}{4}$

C. $1\frac{1}{4}$

D. $2\frac{1}{4}$

9. A triangle has an area of 20 in². If the height of the triangle is 5 inches, find the base of the triangle.

A. 5 inches

B. 8 inches

C. 4 inches

D. 2.5 inches

10. Arlie is on an airplane that has traveled 420 miles in $\frac{3}{4}$ of an hour. At this rate, how far will the airplane travel in the next $\frac{1}{2}$ hour?

A. 630 miles

B. 157.5 miles

C. 280 miles

D. 236 miles

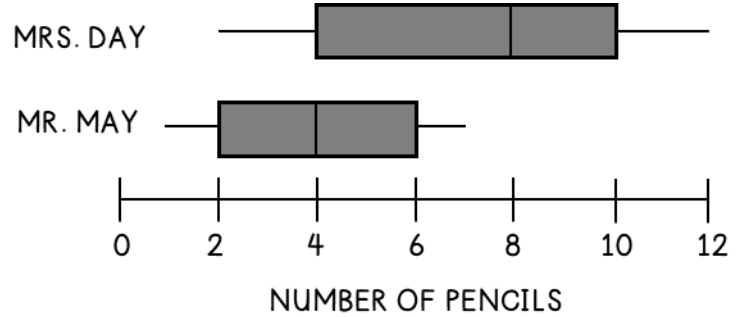11. Triangle PQR is similar to triangle DEF. Find the missing side length of triangle PQR.

A. 10 cm

B. 14.4 cm

C. 17.16 cm

D. 11 cm

Q

6.2 cm.

13 cm.

P

x

R
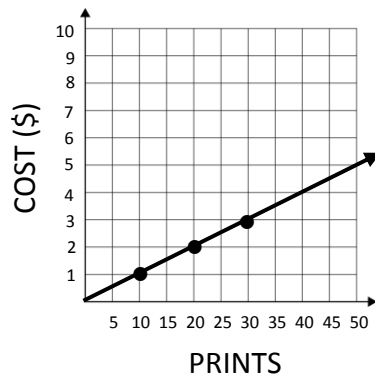
D

12 cm.

7.44 cm.

F

15.6 cm.

E

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.

12. Mrs. Day and Mr. May asked each of their students how many pencils they had in their backpacks. Which statement is supported by the data?

A. Mrs. Day's data is more symmetrical than Mr. May's.
B. Mrs. Day's median is greater than Mr. May's maximum.
C. Mrs. Day and Mr. May's IQR values are equal.
D. Mrs. Day's data has a smaller range than Mr. May's.

MRS. DAY

MR. MAY

0   2   4   6   8   10   12

NUMBER OF PENCILS

---

13. The graph below shows the cost of a purchase at a photo center based on the number of photo prints a customer orders. Find the constant of proportionality.

COST ($)

5 10 15 20 25 30 35 40 45 50

PRINTS

A. 0.50

B. 0.25

C. 0.10

D. 0.15

---

14. A bag has purple, pink and yellow marbles. The probability of selecting a purple marble is $\frac{1}{6}$ and the probability of selecting a pink marble is $\frac{3}{4}$. Find the probability of selecting a yellow marble.

A. $\frac{1}{12}$

B. $\frac{11}{12}$

C. $\frac{1}{9}$

D. $\frac{1}{4}$

---

15. Find the value of x needed to make the equation true.

$$\frac{1}{5}(25x - 20) = 51$$

A. 14.2

B. 9.2

C. 10

D. 11

---

16. A stand at a local market is selling vintage records. They have the following of each type:
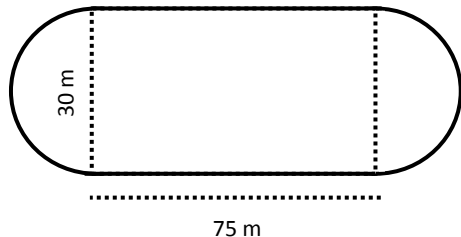
- Rock and Roll: 13
- Country: 8
- Hip hop: 12
- Jazz: 7

If Clayton randomly chooses a record, find the theoretical probability that he will choose a hip hop record.

A. $\frac{1}{5}$

B. $\frac{6}{25}$

C. $\frac{1}{3}$

D. $\frac{3}{10}$

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.

17. Joyce goes walking on a track shaped like the solid line in the diagram shown. Find the total area enclosed by the track.

30 m

75 m

A. 2,956.5 m²

B. 2,250 m²

C. 3,309.75 m²

D. 2,826 m²

18. Solve:

$$-8.64 \div 1.6$$
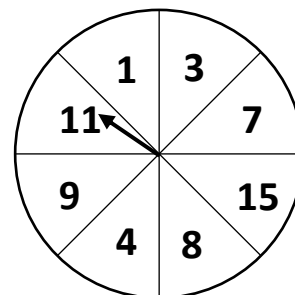
A. -5.4

B. -4.5

C. -13.824

D. -5.12

19. Which of the following expressions is not equivalent to $2c - 8$?

A. $-6 + c - 2 + c$

B. $-2(c + 4)$

C. $3 + 9 + 2c - 20$

D. $2(c - 4)$

20. Melody is going to spin the spinner shown two times. What is the probability that she will spin an even number on the first spin and an odd number on the second spin?
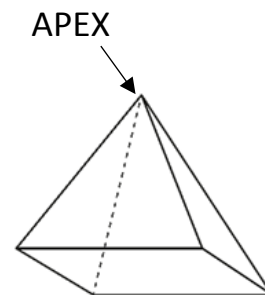
A. 1

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

C. $\frac{3}{16}$

D. $\frac{3}{8}$

21. Carol bought each of her five kids matching snow hats and two pairs of gloves. The hats were priced at $12.00 and each pair of gloves cost the same amount. If the total of Carol's purchase was $135, what was the cost of one pair of gloves?

A. $15.00

B. $30.00

C. $7.50

D. $11.50

22. A square pyramid is cut with a plane that is perpendicular to the base of the pyramid and goes through the apex of the pyramid. Which best describes the shape of the cross section?
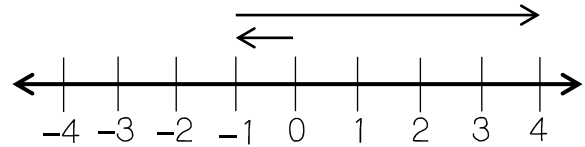
APEX

A. A rectangle

B. A square

C. A triangle

D. A pentagon

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.

23. A bag contains a total of 300 purple and yellow beads. Without looking, a student chooses a bead, records the color and places it back in the bag. The student records 9 purple beads and 16 yellow beads. What is the best prediction of the total number of yellow beads in the bag?	24. Which equation can be represented by the number line below?

24 number line:
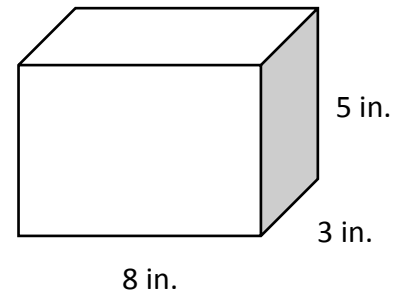

23 options:

A. 108

B. 192

C. 25

D. 168

24 options:

A. -1 – (-5) = 4

B. -1 + (-5) = 4

C. 1 – 5 = 4

D. 1 – (-5) = -4

---

25. Which of the following three side lengths could be joined together to create a triangle?

26. A company has designed its new packaging for a product to be shaped like the prism shown. If the cost of packaging is $0.02 per square inch, find the total cost of the package shown.

5 in.

3 in.

8 in.

25 options:

A. 10 in, 10 in, 20 in

B. 12 in, 15 in, 20 in

C. 3 in, 2 in, 6 in

D. 16 in, 21 in, 4in

26 options:

A. $2.40

B. $1.58

C. $2.78

D. $3.16

---

27. Ivy likes to buy trail mix in bulk at her local grocery store. If she paid $5.16 for 1.2 pounds of trail mix, what was the price per pound?

28. Payton's middle school is conducting a survey to determine students' favorite elective class. Which of the following best describes a random sample?

A. Mr. Hill surveys each of the thirty students in his 1st period class

B. The principal draws thirty students names from each grade level from a bag

C. Coach Carnes surveys thirty of the players from his basketball teams

D. The school counselor surveys thirty randomly selected 8th graders

27 options:

A. $3.96

B. $4.03

C. $4.30

D. $6.19

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.

29. Jenna is mailing a package of candy bars to a friend at a summer camp. The box she is using weighs 6.5 ounces and each candy bar weighs 1.7 ounces. If the total weight of the package needs to be no more than 40 ounces, which inequality can be used to find c, the number of candy bars that Jenna can mail to her friend?

A. $6.5 + 1.7c \leq 40$

B. $6.5 + 1.7c \geq 40$

C. $1.7 + 6.5c \geq 40$

D. $8.2c \leq 40$

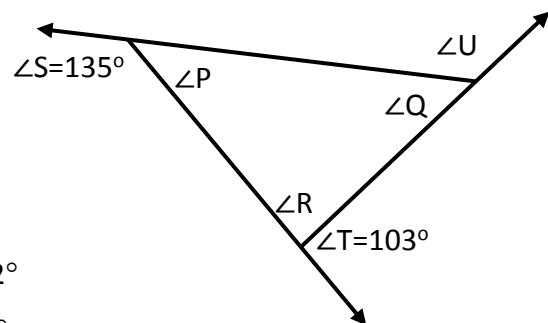**30.** Does the table demonstrate a proportional relationship?

X	Y
7	49
10	70
15	105
17	119

A. No; there is no constant of proportionality.

B. Yes; the ratio of y/x is constant.

C. No; the table does not contain the value (0, 0).

D. No; the x-values are not increasing by a consistent amount.

31. Which of the following fractions does not convert to a repeating decimal?

A. $\dfrac{2}{11}$

B. $\dfrac{4}{9}$

C. $\dfrac{7}{8}$

D. $\dfrac{2}{3}$

32. Find the measure of $\angle U$.

$\angle S = 135°$ $\angle P$ $\angle U$ $\angle Q$ $\angle R$ $\angle T = 103°$

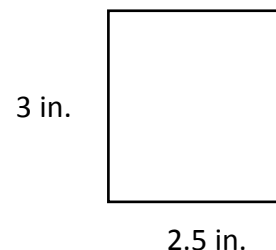A. 122°

B. 58°

C. 130°

D. 128°

33. Taylor wants to purchase an $80 purse. She has found three stores that have the purse originally priced at $80 but are offering 3 different sales this weekend:

- Store A: $\dfrac{1}{5}$ off original price

- Store B: 10% off original price

- Store C: $15 off original price

Which of the following is a true statement?

A. Store A offers the best sale price of $16.

B. Store A offers the best sale price of $64.

C. Store B offers the best sale price of $72.

D. Store C offers the best sale price of $65.

34. The dimensions of the rectangle shown will be enlarged by a scale factor of 4. Find the area of the new rectangle.

3 in.

2.5 in.

A. 60 in²

B. 30 in²

C. 44 in²

D. 120 in²

Solve the problems below, and be sure to show all work. Use 3.14 for pi when necessary.
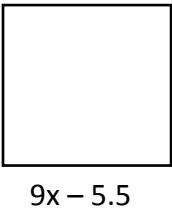
35. Coach Kelly is comparing the heights of the players on her volleyball team with her basketball team. The mean absolute deviation of their heights in inches are shown below:

Volleyball team: M.A.D. = 8.7
Basketball team: M.A.D. = 5.5

Which is a correct conclusion from the data?

A. Coach Kelly's volleyball team has taller players than her basketball team.
B. Coach Kelly's basketball team has taller players than her volleyball team.
C. Coach Kelly's volleyball team has greater variability in the players' heights.
D. Coach Kelly's basketball team has greater variability in the players' heights.

36. Write a simplified expression to represent the perimeter of the square.

$9x - 5.5$

A. $81x - 30.25$

B. $36x - 5.5$

C. $18x - 11$

D. $36x - 22$

37. Mrs. Hoffman teaches U.S. history, world history and geography. She has 22 U.S. history students, 32 world history students and 85 geography students this. If Mrs. Hoffman randomly selects one of her students names, which best describes the likelihood that the student will be in one of her geography classes?

A. Likely

B. Unlikely

C. Certain

D. Impossible

38. Erin went to the grocery store and bought 2 pounds of apples, 3 pounds of oranges and 1 pound of bananas. If sales tax for her order was $0.91 and Erin paid with a $20 bill, how much change did she receive?

Fruit (lb)	Price
Apples	$2.79
Oranges	$2.19
Bananas	$0.79

A. $13.85

B. $6.15

C. $12.94

D. $7.15

39. A variety pack of snacks contains 4 pretzel bags, 3 popcorn bags and 3 cheddar cracker bags. What is the probability that someone selects a pretzel bag, keeps it, and then selects another pretzel bag?

A. $\frac{2}{15}$

B. $\frac{8}{45}$

C. $\frac{6}{50}$

D. $\frac{1}{30}$

40. Paul is making a smoothie recipe that uses $\frac{1}{2}$ cup of strawberries for every $1\frac{1}{2}$ cups of yogurt. If Paul increases the recipe to include 2 cups of yogurt, how many cups of strawberries will he need?

A. 1   B. $\frac{3}{4}$ C. $\frac{2}{3}$ D. $1\frac{1}{2}$