

Teachers and students of 7<sup>th</sup> Grade Mathematics:

Please find attached the Study Guide for the Marion County Grade 7 Mathematics Common End Of Course (CEOC) Exam.

When creating the study guide, I used the Competency Matrix (CM) for the CEOC and chose a question or two from each benchmark that should have been covered throughout the year. I pulled questions from the [Item Specifications](#) on the FLDOE website, as well as our county FCAs and example problems from the Big Ideas and Glencoe MathConnects textbooks.

For additional practice, I would recommend the “Correlation” page offered by Big Ideas Math. You can search for example problems in the book by standard. This page can be found by following this link: [http://www.bigideasmath.com/protected/content/ac/fl/gr\\_7\\_assessment\\_benchmark\\_correlation.pdf](http://www.bigideasmath.com/protected/content/ac/fl/gr_7_assessment_benchmark_correlation.pdf)

Study Guides for all middle and high school mathematics exams can be found on the Marion County Public Schools website [here](#).

Please contact me with any suggestions, questions, comments, etc.

Chris Hanes, Math Program Specialist

[Christopher.Hanes@marion.k12.fl.us](mailto:Christopher.Hanes@marion.k12.fl.us)

(352) 236.0591 or x. 50271

## Grade 7 Mathematics

### Common End-Of-Course Exam Study Guide

**7.A.1.1**      **Distinguish between situations that are proportional or not proportional and use proportions to solve problems.**

1. If  $x$  and  $y$  are related, which of the following is true for  $x$  and  $y$  to be proportional?

- A. If  $x$  is squared, then  $y$  is squared.
- B. If 2 is added to  $x$ , then 2 is added to  $y$ .
- C. If  $x$  is multiplied by 2, then  $y$  is also multiplied by 2.
- D. If 2 is subtracted from  $x$ , then 2 is also subtracted from  $y$ .

2. Larry's recipe for his chocolate fudge is shown below.

- 3 cups semi-sweet chocolate chips
- 14 ounces sweetened condensed milk
- Dash of salt
- $\frac{3}{4}$  cup chopped nuts (optional)
- $1\frac{1}{2}$  teaspoons vanilla extract

Larry is making a large batch of his fudge and will use 12 cups of semi-sweet chocolate chips. Based on this information, what is the total number of ounces of sweetened condensed milk he will need to use?

**7.A.1.2**      **Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percent of increase/decrease.**

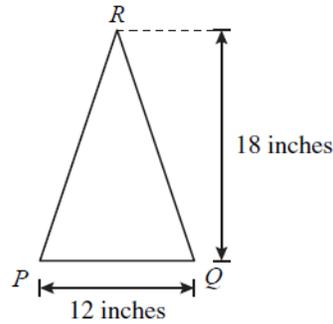
3. A quarterback completed 68% of his passes in a game. He threw a total of 25 passes. How many passes did the quarterback complete?

4. A car loses 15% of its original value each year. After one year, a car has a value of \$13,600. What is the original value of the car?

5. Find the interest earned on an account with \$450 principal, an interest rate of 6% over a period of 8 years.

**7.A.1.3**      **Solve problems involving similar figures.**

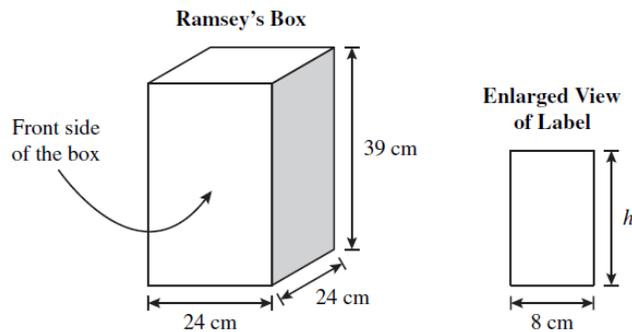
6. The height and base of isosceles triangle  $PRQ$  are shown below.



Evelyn drew another isosceles triangle that was similar to triangle  $PRQ$ . Which of the following could be the dimensions of the triangle Evelyn drew?

- A. Height = 54 inches; base = 24 inches
- B. Height = 24 inches; base = 18 inches
- C. Height = 12 inches; base = 9 inches
- D. Height = 9 inches; base = 6 inches

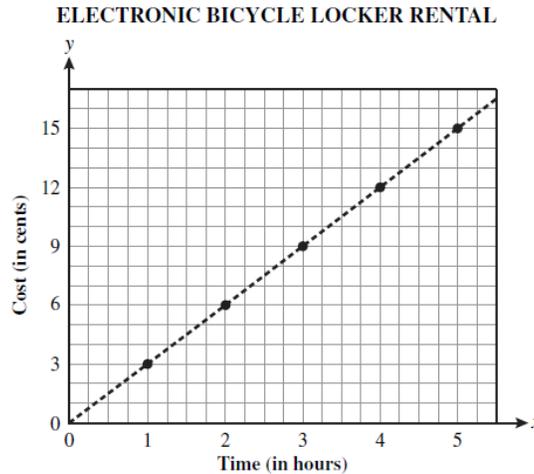
7. Tanya is making a label to fit on the front side of the rectangular prism box with a height of 39 centimeters (cm).



Tanya wants the label to be similar to the front side of the box. If the width of the label is 8 cm, what must be the height, **in centimeters**, of the label?

**7.A.1.4**      **Graph proportional relationships and identify the unit rate as the slope of the related linear function**

8. Electronic bicycle lockers are public storage lockers designed specifically for the storage of bicycles in a transit station. These lockers can be rented for an annual fee. The graph below shows the cost of renting an electronic bicycle locker with the annual fee changed to an hourly rate.



Which of the following shows the rate for renting an electronic bicycle locker?

- A. 1 cent per 3 hours
- B. 3 cents per 1 hour
- C. 5 cents per 16 hours
- D. 16 cents per 5 hours

9. Find the unit rate: \$3.20 for 8 ounces

**7.A.1.5**      **Distinguish direct variation from other relationships, including inverse variation.**

10.

Which of the following tables does NOT represent a direct variation between  $x$  and  $y$ ?

A.

$x$	3	6	12	24
$y$	4	8	16	32

B.

$x$	5	8	11	14
$y$	6	9	12	15

C.

$x$	2	6	8	10
$y$	5	15	20	25

D.

$x$	1	3	9	27
$y$	3	9	27	81

Tell whether  $x$  and  $y$  show direct variation, inverse variation, or neither.

11.  $xy - 11 = 5$

12.  $8 = \frac{y}{x}$

**7.A.1.6**      **Apply proportionality to measurement in multiple contexts, including scale drawings and constant speed.**

13. Dale and his family are planning a trip from Seattle to Miami. The distance between the cities is 5322 kilometers. Dale drew a line segment on a U.S. map from Seattle to Miami to show his younger sister the distance between the two cities. If the scale on the map shows that 2 centimeters represents 600 kilometers, what is the length of the line segment Dale drew on the map between the two cities?

- A. 4.44 cm
- B. 8.87 cm
- C. 10.87 cm
- D. 17.74 cm

14. Dominic drove 324 miles from Salt Lake City, Utah, to Bryce Canyon National Park in 6 hours and 45 minutes. What was his average speed, in miles per hour?

**7.A.3.1**      **Use and justify the rules for adding, subtracting, multiplying, dividing, and finding the absolute value of integers.**

- 15. Find the absolute value of -9.
- 16. Find the product of  $-8 \cdot -7$ .
- 17. Complete the statement using  $<$ ,  $>$  or  $=$

4 \_\_\_  $|-8|$

**7.A.3.2**      **Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents (including solving problems in everyday contexts).**

18. The balance of your checking account is \$75. You withdraw \$87. What is your new balance?

19. On a cold day, Rupert measured the outside temperature and discovered it was 13°F.

Each hour after that, Rupert measured the outside temperature and discovered it was 3°F colder than the previous hour's temperature. At this rate, how many hours would it take for the temperature to reach -17°F?

- A. 4 hours
- B. 9 hours
- C. 10 hours
- D. 30 hours

20.  $\frac{12}{7} - \left(\frac{2}{9}\right) =$

21.  $-1\frac{5}{6} \div 4\frac{1}{6} =$

**7.A.3.3**      **Formulate and use different strategies to solve one-step and two-step linear equations, including equations with rational coefficients. (Also assesses 7.A.5.2: Solve non-routine problems by working backwards.)**

22. Which of the following steps would solve  $\frac{2}{3}x - 4 = 10$  ?

- A. Add 4 to both sides of the equation, then multiply both sides by  $\frac{2}{3}$
- B. Add 4 to both sides of the equation, then multiply both sides by  $\frac{3}{2}$
- C. Subtract 4 from both sides of the equation, then multiply both sides by  $\frac{2}{3}$
- D. Subtract 4 from both sides of the equation, then multiply both sides by  $\frac{3}{2}$

23. When Eric became a member of an exercise gym, he paid a one-time fee of \$250. He then had to pay \$79.95 per month. So far, Eric has paid a total of \$969.55, not including tax. What is the number of months for which Eric paid?

**7.A.3.4**      **Use the properties of equality to represent an equation in a different way and to show that two equations are equivalent in a given context.**

24. Which is equivalent to  $-3(4x - 6) = 20$  ?

- A.  $-12x - 6 = 20$
- B.  $-12x + 18 = 20$
- C.  $-12x - 6 = -60$
- D.  $-12x + 18 = -60$

**7.A.5.1**      **Express rational numbers as terminating or repeating decimals.**

25. Express  $\frac{13}{36}$  as a repeating decimal.

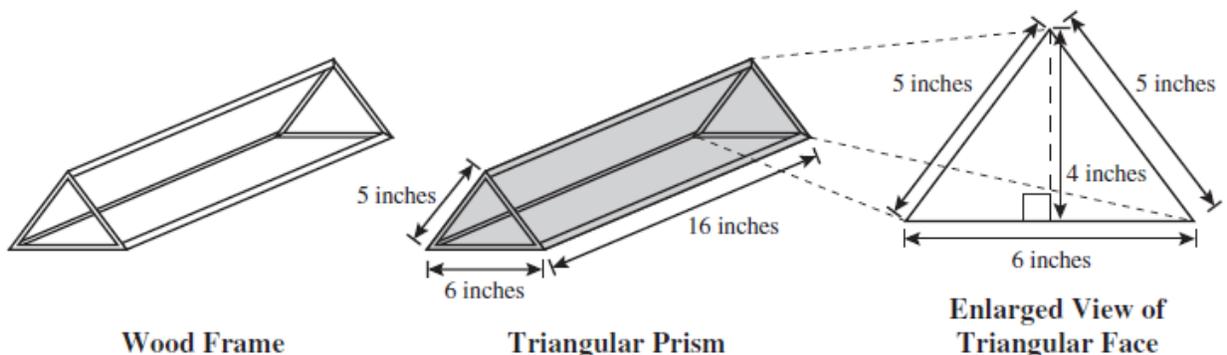
26. Write as a decimal:  $\frac{36}{5}$

**7.G.2.1**      **Justify and apply formulas for surface area and volume of pyramids, prisms, cylinders, and cones.**

27. Jonah is calculating the volume of a right circular cylinder. Which of the following is a correct method for calculating the volume of a cylinder?

- A. Calculate the area of the base and multiply by the height.
- B. Calculate the circumference of the base and multiply by the height.
- C. Calculate the area of the base, multiply by 2, and multiply by the height.
- D. Calculate the circumference of the base, multiply by 2, and multiply by the height.

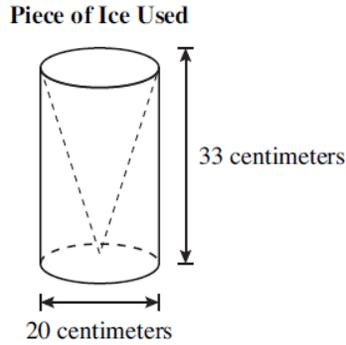
28. Maura made a wood frame and covered it with transparent red plastic wrap to create a triangular prism, as shown below.



What is the total surface area, in square inches, of the prism?

**7.G.2.2**      **Use formulas to find surface areas and volume of three-dimensional composite shapes.**

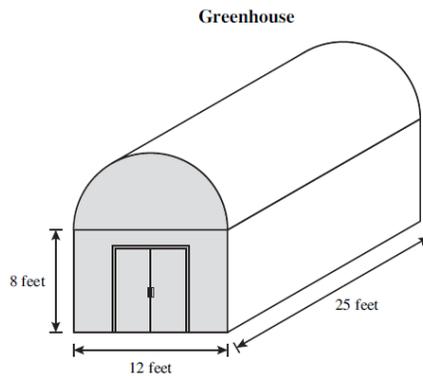
29. Rebecca used a right circular cylinder piece of ice to cut out a cone. The dimensions of the ice piece she used are shown below.



Which is closest to the volume of the remaining ice after Rebecca removes the largest cone possible from the right circular cylinder?

- A.  $1351 \text{ cm}^3$
- B.  $3456 \text{ cm}^3$
- C.  $6911 \text{ cm}^3$
- D.  $10,367 \text{ cm}^3$

30. The greenhouse shown below has the shape of half a cylinder and a rectangular prism.



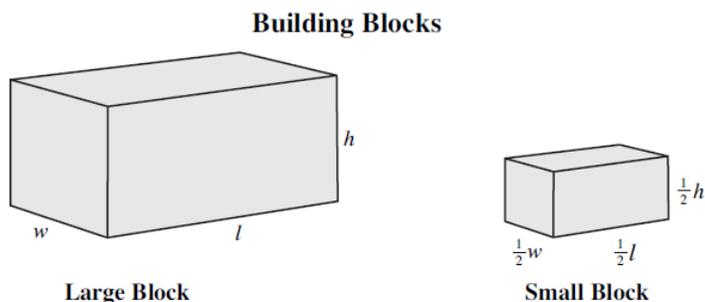
In order to air-condition the building, the owner needs to know the volume of air space in the empty greenhouse. What is the volume, **in cubic feet**?

**7.G.4.1**      **Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and apply these relationships to solve problems.**

31. Toni has a rectangular vegetable garden that measures 12 feet by 18 feet. She wants to reduce the area of her garden. If Toni reduces the dimensions of her garden to 12 feet by 9 feet, how will the area of the new garden compare to the area of the old garden?

- A. The area will be one-half as large.
- B. The area will be two-thirds as large.
- C. The area will be one-fourth as large.
- D. The area will be three-fourths as large.

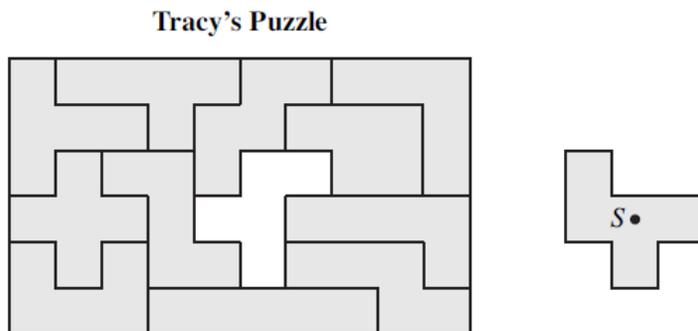
32. Jeff is building walls using the building blocks shown below. The dimensions of the small blocks are  $\frac{1}{2}$  the size of the dimensions of the large blocks. Jeff's wall has a length ( $l$ ) of 5 large blocks and a height ( $h$ ) of 2 large blocks.



How many small blocks does Jeff need to build a wall with the **same volume** as the wall he made with large blocks?

**7.G.4.2** Predict the results of transformations and draw transformed figures, with and without the coordinate plane.

33. Tracy is playing a puzzle game on the computer. She has placed all the pieces in the puzzle except for one, as shown below.

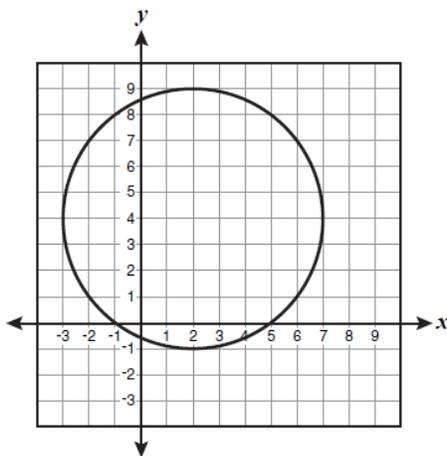


Tracy can complete the puzzle by performing two transformations on the remaining puzzle piece. Which two transformations should Tracy perform?

- A. a  $90^\circ$  clockwise rotation about point  $S$ , followed by a translation to the left
- B. a  $90^\circ$  counterclockwise rotation about point  $S$ , followed by a translation to the left
- C. a reflection across a vertical line, followed by a  $90^\circ$  clockwise rotation about point  $S$
- D. a reflection across a vertical line, followed by a  $90^\circ$  counterclockwise rotation about point  $S$

**7.G.4.3** Identify and plot ordered pairs in all four quadrants of the coordinate plane.

34. Daniel drew a circle on a grid, as shown below

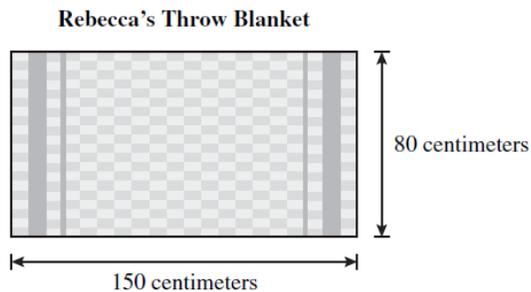


Which coordinates best represent the location of a point that is NOT on the circle?

- A. (-3, 4)
- B. (-1, 8)
- C. (7, 4)
- D. (8, 5)

**7.G.4.4**      **Compare, contrast, and convert units of measure within different measurement systems (US Customary or Metric – SI), dimensions, and derived units to solve problems.**

35. Rebecca bought a rectangular throw blanket like the one shown below.



Which is closest to the dimensions, in inches, of Rebecca's throw blanket?

- A. 59 inches by 32 inches
- B. 59 inches by 80 inches
- C. 75 inches by 40 inches
- D. 80 inches by 150 inches

36. Melanie is making punch for the school dance. The recipe calls for 6 cups of juice for each of the 8 punch bowls. How many **gallons** of juice does she need?

**7.P.7.1**      **Determine the outcome of an experiment and predict which events are likely or unlikely, and if the experiment is fair or unfair.**

37. Mrs. Davis is teaching her class about probability. She prepared the set of golf balls listed below.

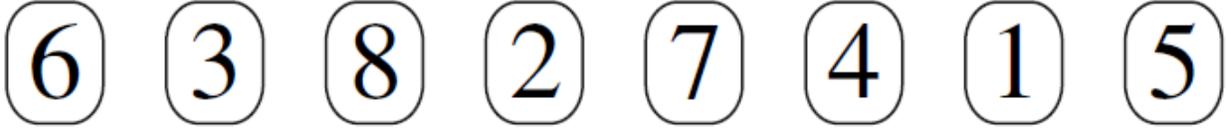
- 6 red golf balls, each labeled with a different number from 1 to 6
- 7 green golf balls, each labeled with a different number from 1 to 7
- 8 blue golf balls, each labeled with a different number from 1 to 8
- 9 yellow golf balls, each labeled with a different number from 1 to 9

Mrs. Davis put all the golf balls into a sack and mixed them up. Nancy will be the first student to select a golf ball from the sack without looking. Which of the following outcomes is **most likely** to occur?

- A. Nancy will select a yellow golf ball.
- B. Nancy will select a golf ball that is not blue.
- C. Nancy will select a golf ball with the number 6 on it.
- D. Nancy will select a golf ball with a number on it that is not 1.

**7.P.7.2** Determine, compare, and make predictions based on experimental or theoretical probability of independent or dependent events.

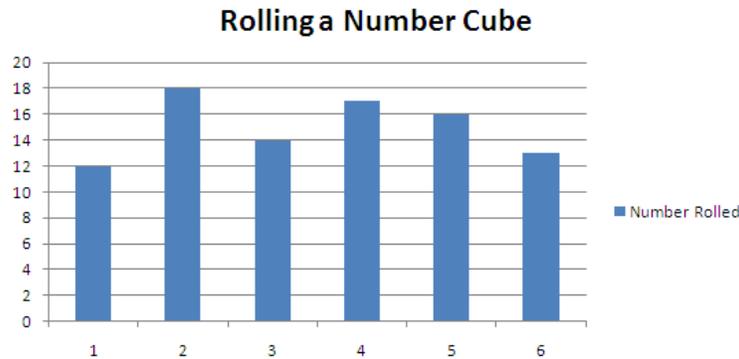
38. James has the set of cards shown below.



James will shuffle the cards, select one without looking, record the number of the card, and return the card to the set. He will repeat this process 50 times. Which is closest to the number of times he should expect to select a card with a number greater than 5?

- A. 6
- B. 10
- C. 19
- D. 25

Use the bar graph below to find the experimental probability of the event.



39. Rolling a 1 or 2.

40. *Not* rolling a 5.

**7.S.6.1**      **Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population.**

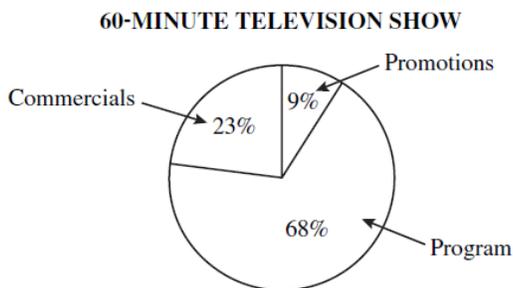
41. A cable television company will add new channels to its service. The company president wants to have 100 customers surveyed by telephone in a single weekend to find out what kind of channels customers want. Which method would increase the bias in the survey?

- A. performing the survey over a period of one week
- B. increasing the number of customers surveyed to 300
- C. surveying the 100 customers who have had cable service with this company for the longest period of time
- D. mailing the survey questions to all the customers and offering a 25% discount on cable service to the first 100 customers who return the survey

42. Of 40 randomly chosen students surveyed, 15 chose the amusement park as their favorite field trip. There are 480 students in the school. Predict the number of students in the school who would choose the amusement park as their favorite field trip.

**7.S.6.2**      **Construct and analyze histograms, stem-and-leaf plots, and circle graphs.**

43. Television programs are separated into parts by commercials and network promotions. The circle graph below shows the percent of a 60-minute television show that is used for commercials, promotions, and the program itself.



Which is closest to the number of minutes used for commercials and promotions during that 60-minute television show?

- A. 5
- B. 14
- C. 19
- D. 32