Teachers and students of 6th Grade Mathematics:

Please find attached the Study Guide for the Marion County Grade 6 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_6_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.

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Grade 6 Advanced Mathematics
Common End-Of-Course Exam Study Guide

6.A.1.3   **Solve real-world problems involving multiplication and division of fractions and decimals**

1. At your birthday party, $\dfrac{3}{5}$ of the 20 guests were relatives. How many relatives were at your party?

2. During a period of 45 days, rain fell on $\dfrac{2}{3}$ of the days. On how many days did rain fall?

3. How many minutes does it take to put 45 gallons of water in the tub at a rate of $2\dfrac{1}{4}$ gallons per minute?

6.A.2.1   **Use reasoning about multiplication and division to solve ratio and rate problems.**

4. Amanda drove 770 miles in two days to visit a friend. On the first day, she drove 8 hours at an average speed of 55 miles per hour. She continued to drive at the same rate on the second day. How many hours did Amanda drive on the second day?

5. Four bottles of fruit juice cost $7. How much do 11 bottles cost?

6. A great white shark swims 90 feet in 2.5 seconds. What is its speed?

6.A.2.2   **Interpret and compare ratios and rates**

7. The ratio of red marbles to blue marbles in a bag is 2:3. If there are 36 blue marbles in the bag, how many red marbles are in the bag?

8. A 12 pack of Coca-Cola costs $4.89 at Publix. A 24 pack of Coca-Cola costs $9.69 at Winn-Dixie. Which store offers the better buy?

9. There are 325 boys and 455 girls at Marion Middle School. Write the ratio of boys to girls in simplest form.

6.A.3.1   <u>**Write and evaluate mathematical expressions that correspond to given situations.**</u>

10. Beach World rents bicycles by the hour. They charge a one-time fee of $5, plus $10 per hour. If x represents the number of hours, write an expression to calculate the total charge, in dollars, to rent a bicycle for x hours.

11. Hollywood 16 charges $4.25 for a drink and $3.75 for a bag of popcorn. The expression below can be used to determine the total cost of d drinks and p bags of popcorn.

         4.25d + 3.75p

What would be the total cost, in dollars, to purchase 4 drinks and 2 bags of popcorn?

12. Evaluate the expression when a = 3, b = 5 and c = 10

         2a + 3c − 4b

6.A.3.2   <u>**Write, solve, and graph one- and two- step linear equations and inequalities.**</u>

For #13 & #14, solve for the given variable.

13. $3x + 2 = 20$

14. $5y − 7 \leq 13$

15.   Mr. Schmidt is purchasing film for his camera. With the roll of film that is in his camera now, he can take 18 pictures. Mr. Schmidt wants to purchase several rolls of film that can each produce up to 36 pictures. The equation below can be used to determine p, the total number of pictures Mr. Schmidt can take based on r, the number of rolls of film he purchases.

$$p \; 36r + 18$$

If Mr. Schmidt purchases 3 rolls of film, what is the total number of pictures he can take?

6.A.3.5   <u>**Apply the Commutative, Associative, and Distributive Properties to show that two expressions are equivalent.**</u>

16. Create an expression equivalent to 6(a − b) using the Distributive Property.

17. Simplify the expression 3.5 • x • 2

18. Create an expression equivalent to 24 + (7 + x) using the Associative Property of Addition.

6.A.3.6   **Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations verbally and algebraically.**

19. A cellular phone company charges a fixed monthly fee, plus $0.25 for each minute the phone is in use. The table below shows that *T*, the total charge for one month, depends on *m*, the number of minutes the phone is in use.

CELLULAR CHARGES FOR ONE MONTH

Minutes (*m*)	Total Charges (*T*)
20	$17.50
30	$20.00
40	$22.50
50	$25.00
60	$27.50

Which equation correctly shows the relationship between *T* and *m*?

A. $T = 0.25m + 17.50$

B. $T = m + 17.30$

C. $T = 0.25m + 12.50$

D. $T = m - 2.50$

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6.A.5.1   **Use equivalent forms of fractions, decimals, and percents to solve problems.**

20. Mrs. Nelson has 20 students in her classroom. She noticed that $\frac{3}{10}$ of the students have blue eyes and $\frac{1}{2}$ of the students have brown eyes. The rest of the students have green eyes. What percent of the students in Mrs. Nelson's class have green eyes?

21. A school held an election for student body president. When the election was over, the principal announced some facts about the election, as shown below.

- A total of 800 votes were cast for president
- 20% of the votes for president were for Brian
- $\frac{3}{8}$ of the votes for president were for Paulette

The remaining votes for president were for Shirley. What was the total number of votes for Shirley?

6.A.5.2   **Compare and order fractions, decimals, and percents with and without a number line.**

22. Place the following numbers in order from **least** to **greatest:** $\frac{1}{3}$, 0.3, 35%, $\frac{1}{4}$

23. Which of the following numbers would be nearest zero on the number line?

A. 0.5   B. 0.085   C. $\frac{1}{3}$ D. $\frac{9}{100}$

6.A.5.3   **Estimate the results of computations with fractions, decimals, and percents, and judge the reasonableness of the results.**

24. Mr. Madsen worked 49 hours last week at his job. He spent $\frac{1}{5}$ of this time in meetings and $\frac{1}{3}$ of this time talking to customers on the phone. Which method would provide the most reasonable estimate of the total number of hours Mr. Madsen spent in meetings and talking to customers on the phone at his job last week?

A. multiply $\frac{1}{4}$ by 50   **C.** multiply $\frac{1}{5}$ by 50 and add $\frac{1}{3}$ to the product

B. multiply $\frac{1}{2}$ by 50   **D.** multiply $\frac{1}{5}$ by $\frac{1}{3}$ and multiply the product by 50

Estimate by rounding each factor to the nearest whole number.

25.   7.28 x 5 =
26.   9.89 x 8 =

6.G.4.1   <u>**Understand the concept of** __ **, know common estimates of** __ **(3.14; —) and use these**</u>

<u>**values to estimate and calculate the circumference and the area of circles.**</u>

27. In a regulation wrestling match, wrestlers compete within a circular zone 9 meters in diameter.

Wrestling Mat

Blue Corner

9 meters

Protection Zone

Red Corner
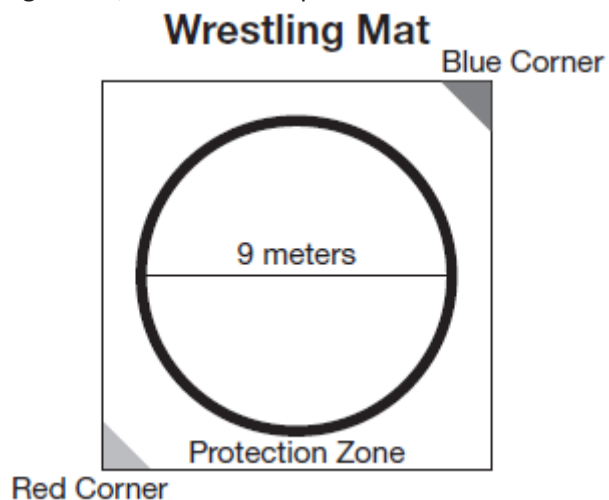
Which of the following is closest to the area of the circular zone?

A. 28.3 square meters
B. 56.5 square meters
C. 63.6 square meters
D. 254.3 square meters

28. Find the circumference of a circle with a radius of 12 centimeters.

6.G.4.2 **Find the perimeters and areas of composite two-dimensional figures, including non-rectangular figures (such as semicircles).**

29. Dana plans to paint the front face of her doghouse, as shown by the shaded region below. The face is rectangular in shape, with 2 congruent rectangular doorways cut out.

5 feet

3 feet

2 feet

1.25 feet   1.25 feet

Front Face of Doghouse
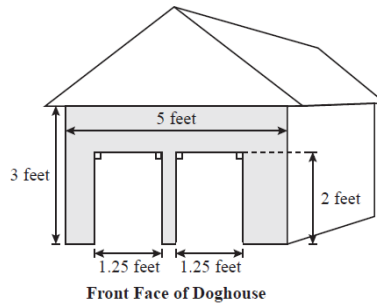
Dana needs to calculate the area of the shaded region to be painted so she can purchase the correct amount of paint. What is the area of the shaded region of her doghouse that needs to be painted?

A. 5 square feet
B. 10 square feet
C. 10.5 square feet
D. 12.5 square feet

30. Find the area

14cm

7 cm   7cm

15cm   9 cm   15cm

38 cm
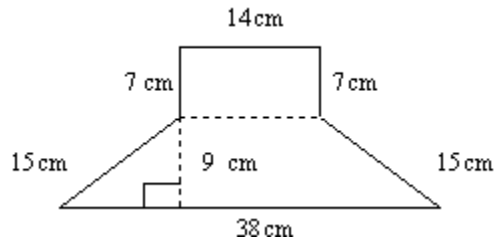
6.G.4.3   **Determine a missing dimension of a plane figure or prism given its area or volume and some of the dimensions, or determine the area or volume given the dimensions.**

31. Lamar is building a glass case for a reptile display. The interior of the case is in the shape of a rectangular prism with the dimensions shown in the diagram.
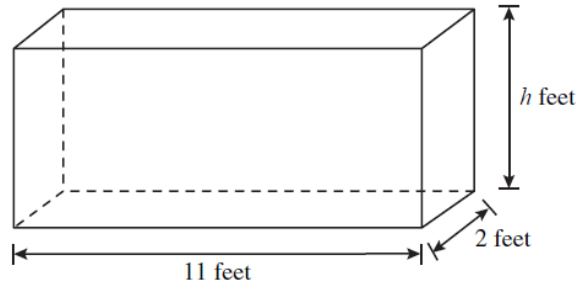
The total volume of the interior of the case is 154 cubic feet. What is the value of *h*?

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6.S.6.1   **Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.**
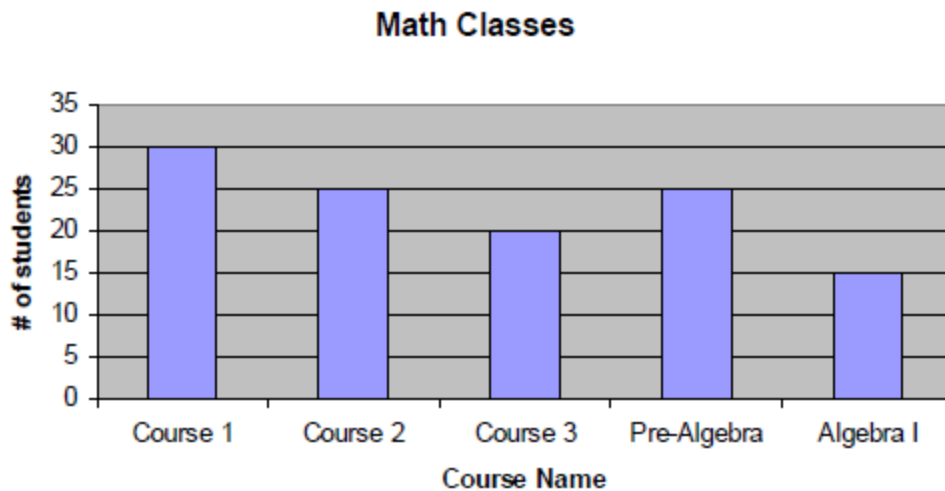
32. In a section of the Ocala National Forest, the rangers measured the height of several trees. The heights were as follows: 78 feet, 65 feet, 83 feet, 85 feet, 92 feet, 84 feet.
What is the mean of the tree heights?
What is the median of the tree heights?
What is the range of the tree heights?

33. Find the mean, median and mode for the data displayed on the graph below.

Math Classes

6.S.6.2   **Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set.**

34. Noreen took 5 tests in her science class. Her test scores are shown in the table below.

NOREEN'S TEST SCORES

Chapter in Science Book	Test Score
1	70
2	90
3	80
4	50
5	70

Noreen's teacher calculated the mean, median, mode, and range of Noreen's set of test scores. Which of these measures has the highest value?

A. mean
B. median
C. mode
D. range

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

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

36. 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?

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

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

38. Find the absolute value of -9.

39. Find the product of -8 • -7.

40. 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.

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

42. On a cold day, Rupert measured the outside temperature and discovered it was 13ºF.

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

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

43. $\dfrac{12}{7} - (\dfrac{2}{9}) =$

44. $-1\dfrac{5}{6} \div 4\dfrac{1}{6} =$

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7.A.3.3 **Formulate and use different strategies to solve one-step and two-step linear equations, including equations with rational coefficients.**

45. 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 $\frac{3}{2}$

46. 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?

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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.**

47. 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.**

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

49. 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.**

50. 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.

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

Wood Frame   **Triangular Prism**   **Enlarged View of Triangular Face**
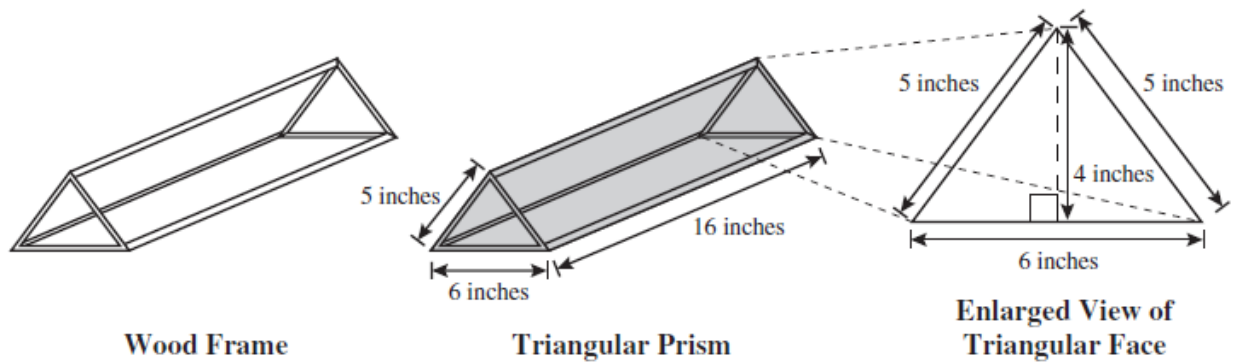
What is the total surface area, **in square inches**, of the prism?

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

52. 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.

Piece of Ice Used

33 centimeters

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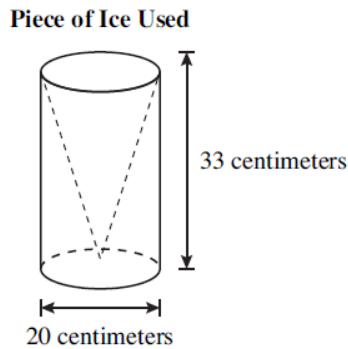
Which is closest to the volume of the remaining ice after Rebecca removes the largest cone possible from the right circular cylinder?

A. 1351 cm^3
B. 3456 cm^3
**C.** 6911 cm^3
D. 10,367 cm^3

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

Greenhouse

8 feet

25 feet

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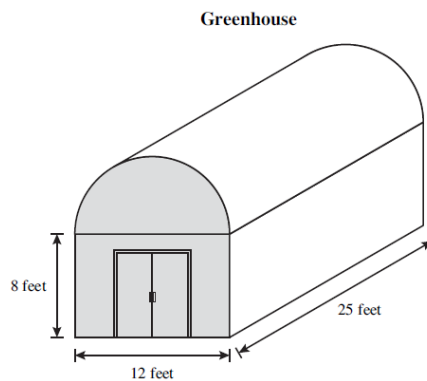
In order to air-condition the building, the owner needs to know the volume of air space in the empty greenhouse. What is the volume, **in cubic feet**?

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

54. Daniel drew a circle on a grid, as shown below
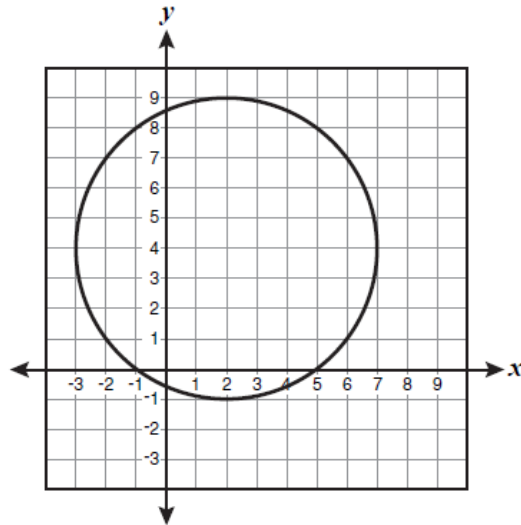
Which coordinates best represent the location of a point that is NOT on the circle?

A. (-3, 4)

B. (-1, 8)

C. (7, 4)

D. (8, 5)