Grade 7 to 8 - Summer (2019) Math Packet

Directions: All of the questions in this packet reflect seventh grade math standards. Please answer all of the questions and return this packet to your new math teacher in September. All work needs to be shown, even for multiple choice questions. When answering the short response questions, show all work and write your explanations using good math vocabulary and grammar. Enjoy your summer vacation!

Part 1: Multiple Choice

1. Ellen deposited $2,500 into a savings account that earns 5% interest per year. Her friend's bank offers a 6 1/2% annual interest rate. How much more money would Ellen's money have earned in one year if she had deposited her money at her friend's bank?

   A. $12.50
   B. $32.50
   C. $37.50
   D. $16.25

   1 ________

2. Solve the equation for the given variable:

   \[-3x - 4(2 - x) = -5\]

   A. \(-\frac{3}{4}\)
   B. 3
   C. \(-1\frac{1}{3}\)
   D. -13

   2 ________

3. What is "180 square feet of wall painted in 12 minutes" written as a unit rate in seconds?

   A. 3 square feet of wall painted/second
   B. 0.25 square feet of wall painted/second
   C. 900 square feet of wall painted/second
   D. 15 square feet of wall painted/second

   3 ________

4. Which one of the following charts shows a proportional relationship between quantities?

   A
   B
   C
   D

   4 ________

5. Simplify the given expression:

   \[24xy - xy = \]

   A. 24
   B. \(-23xy\)
   C. 23xy
   D. 25xy

   5 ________
6 The Somber Mask Drama Club is putting on a pancake breakfast as a fundraiser. The number of pancakes depends on the number of cups of batter used.

<table>
<thead>
<tr>
<th>Number of Cups</th>
<th>Number of Pancakes</th>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
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<tr>
<td>3</td>
<td>12</td>
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<td>4</td>
<td>16</td>
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<td>6</td>
<td>24</td>
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What quantity of batter is used for each pancake?

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

7 If twelve pounds of nails cost $3.84, what is the unit cost?

A 32¢
B 28¢
C 23¢
D 18¢

8 A department store uses a markup rate of 35% on all its calculators. What is the selling price of a calculator which cost the store $62?

A $83.70
B $87.30
C $93.70
D $21.70

9 Find the sum of the given set of numbers: $(-27) + (-29) + 50$

A 6
B -6
C -48
D 48

10 Solve the given expression:

$-5 \frac{1}{4} + -8 \frac{1}{5} =$

A $-3 \frac{1}{20}$
B $\frac{9}{20}$
C $-\frac{9}{20}$
D $3 \frac{1}{20}$

11 Jackie bought three pounds of fish. Her recipe calls for $\frac{1}{4}$ pound of fish per serving. How many people will the fish feed?

A 12
B 6
C 9
D 15

12 How is the given expression rewritten using the Distributive Property?

$7x + (-2x)$

A $-x(7 + 2)$
B $x(7 + 2)$
C $-7(x + -2)$
D $-2(x + -7)$

13 The distance between Miami, FL and Washington DC on a map is 12.5 centimeters. If the map scale is 2 centimeters = 160 miles, what is the actual distance between the two locations?

A 320 miles
B 1,000 miles
C 2,000 miles
D 2,500 miles
14 If the sum of the measures of two angles of a triangle is equal to the measure of the third angle, the triangle must be

A obtuse.
B acute.
C right.
D isosceles.

15 Which of the following is a valid proportion?

A \( \frac{3}{2} = \frac{40}{65} \)
B \( \frac{2}{9} = \frac{5}{18} \)
C \( \frac{17}{51} = \frac{12}{8} \)
D \( \frac{3}{2} = \frac{90}{60} \)

16 If the actual distance between two locations is 10 miles and the map scale is 2 inches = 5 miles, what is the distance between the two locations on the map?

A 10 inches
B 20 inches
C 8 inches
D 4 inches

17 Write "192 miles on 12 gallons" as a unit rate per quart in simplest form.

1 gallon = 4 quarts

A \( \frac{64 \text{ miles}}{1 \text{ quart}} \)
B \( \frac{1 \text{ quart}}{4 \text{ miles}} \)
C \( \frac{4 \text{ miles}}{1 \text{ quart}} \)
D \( \frac{16 \text{ miles}}{1 \text{ quart}} \)

18 The bar graph shows a student's scores on five tests. What is the mean of these scores?

A 90
B 88
C 80
D 85

19 What would be the cost of refinishing a hardwood floor 11 feet 2 inches by 9 feet 10 inches at $2.50 per square foot?

A $105.00
B $329.40
C $274.40
D $52.50

20 Jana is in charge of a fundraiser for Pendelton Elementary School. She wants to conduct a survey to see what items the students want to sell. Which group would give the best representative sample?

A 67 sixth-grade students
B 67 students selected randomly from grades 1–6
C 67 students who participate in after-school activities
D 67 students from grades 1–6 not participating in the fundraiser

21 Find the mean of the following numbers: 64, 76, 63, 69, 72, 76

A 70
B 71
C 72
D 76
A computer malfunctioned 19 hours out of a total of 500 hours of computer operation. What percent of the total time of operation was the computer malfunctioning?

A 38%
B 3.8%
C 2.8%
D 26.32%

The salaries of six executives of a computer company are $87,000, $62,400, $54,600, $66,000, $75,400, and $59,000. Find the median salary of the six executives.

A $66,000
B $67,400
C $62,400
D $64,200

Camille is playing a game in the car with her brother, Cory. With the backs of the cards facing them both, Cory picks a card at random, notes the suit, and then returns the card to his sister’s hand. Camille then has to guess the drawn card’s suit.

If Cory repeats the process described 180 times, predict how many times you would expect him to pick a diamond, spade, or club card.

A 120
B 60
C 135
D 75

A jeweler purchased a \( \frac{5}{8} \) carat diamond for $750. What would be the cost of a similar diamond weighing one carat?

A $1,200
B $1,500
C $1,000
D $468

Simplify the given expression: \( 15y^3 - 6y^3 = \)

A 9
B \( 9y^3 \)
C \( 9y^6 \)
D \( -9y^3 \)

What inequality is represented by the graph below?

A \(-5 \leq x \leq 6\)
B \(-5 < x < 6\)
C \(-5 \leq x < 6\)
D \(-5 < x \leq 6\)

Solve the equation for the given variable:

\[ 8 = 5z - 27 \]

A 1
B 5
C 3
D 7

What is the probability of a triangle having more than one internal obtuse angle?

A \( \frac{1}{2} \)
B \( \frac{1}{3} \)
C 0
D 1

What is the probability that the sun will not rise tomorrow?

A 100
B 0.5
C 0
D 1

When a number is chosen at random from the set \{1, 2, 3, 4, 5, 6\}, which one of the following events has the greatest probability of occurring?

A choosing a number greater than 3
B not choosing either 1 or 6
C choosing a prime number
D choosing an even number
32 Which of the following is a valid proportion?  
   A \[ \frac{16}{184} = \frac{2}{23} \]  
   B \[ \frac{5}{18} = \frac{15}{72} \]  
   C \[ \frac{2}{5} = \frac{10}{35} \]  
   D \[ \frac{50}{70} = \frac{10}{17} \]  

33 A plumber purchases a used truck for $9,200 and must pay a sales tax of 6% of the purchase price. Find the sales tax.  
   A $525  
   B $425  
   C $552  
   D $5,648

34 Shania is conducting an experiment with a standard 6-sided die. Event A is rolling a number greater than 4 while event B is rolling an even number. She wants to display the possible outcomes in a Venn diagram. Which number(s) should she write in the intersection of the two circles for event A and event B?  
   A 2, 4, and 6  
   B 4 and 6  
   C 2, 4, 5, and 6  
   D 6 only

35 What is the probability of a week consisting of 175 hours?  
   A 100  
   B 0.5  
   C 0  
   D 1

36 92% of 115 is what number?  
   A 105.80  
   B 80.00  
   C 125.00  
   D 97.34

37 What is 21 feet of bricks laid in 7 minutes written as a unit rate per hour?  
   A 180 feet of bricks laid/hour  
   B 420 feet of bricks laid/hour  
   C 90 feet of bricks laid/hour  
   D 3 feet of bricks laid/hour

38 Selma threw a penny, a dime, and a quarter into a fountain. What is the probability all 3 coins will settle tails face up?  
   A \( \frac{1}{2} \)  
   B \( \frac{1}{6} \)  
   C \( \frac{1}{3} \)  
   D \( \frac{1}{8} \)

39 When rice is prepared, the amount of rice varies proportionately to the amount of water required. If 2 cups of rice requires 4.5 cups of water, then what is the total number of cups of water needed to prepare 1 cup of rice?  
   A 2 cups  
   B 2.25 cups  
   C 2.5 cups  
   D 2.75 cups

40 Damian buys a boat. He buys gasoline at a unit rate of $g$ dollars per gallon. He puts 24.3 gallons of gasoline in the boat's main tank and puts 0.70 gallons of gasoline in its reserve tank. Which expression represents how many dollars he spent on gasoline?  
   A $24.3 + 0.07$  
   B $25g$  
   C $24.3g + 0.70$  
   D $24.3 + 0.70$
41. A new labor contract called for a 6.5% increase in pay for all employees. What is the new wage of an employee who was making $560 per week?
   A  $924.00
   B  $563.64
   C  $36.40
   D  $596.40

42. Wayne answered 58 out of 65 questions on a test correctly. What was the percentage he answered incorrectly?
   A  91%
   B  89%
   C  9%
   D  11%

43. Simplify: \[ 4 - \frac{1}{0.4} = \]
   A  2.4
   B  1.5
   C  1.2
   D  3.4

44. What is the value of \( y \) when \( \angle L M N = 170^\circ \)?
   A  11
   B  7
   C  9
   D  14

46. Find the correct completely factored form of the given expression: \(-24g - 2h\)
   A  \(-2(12g + h)\)
   B  \(-2(-12g + h)\)
   C  \(2(12g - h)\)
   D  \(-2(-12g - h)\)

47. Elizabeth's dad is helping her conduct an experiment for homework. Elizabeth randomly chooses one card from the 10 cards held by her dad, looks at the number, and then replaces the card.
   How many times would you expect Elizabeth to repeat the process described in order to pick a number greater than six 60 times?
   A  24
   B  150
   C  600
   D  120

48. How is the given expression rewritten using the Distributive Property?
   \[ 0.7z + 2.3z \]
   A  \( z(0.7 + 2.3) \)
   B  \( 0.7z(2.3z) \)
   C  \( z(0.7 - 2.3) \)
   D  \( 2.3z(0.7z) \)

49. What is the value of \( x \) when \( m\angle DEF = 54^\circ \)?
   A  4
   B  15
   C  12
   D  11.5
50. Given $\angle ABC = 178^\circ$, what is the measure of $\angle ABD$.
   
   A 126°  
   B 28°  
   C 23°  
   D 150°  
   
   50

51. What is the surface area of a cube whose side measures 3 cm?
   
   A 324 cm²  
   B 36 cm²  
   C 54 cm²  
   D 12 cm²  
   
   51

52. Which of the following is a valid proportion?
   
   A $\frac{6}{9} = \frac{60}{80}$  
   B $\frac{7}{35} = \frac{14}{80}$  
   C $\frac{5}{14} = \frac{30}{72}$  
   D $\frac{65}{85} = \frac{13}{17}$  
   
   52

53. What is "$96 spent in 4 hours" written as a unit rate in minutes?
   
   A $0.40/minute  
   B $1.60/minute  
   C $0.53/minute  
   D $0.30/minute  
   
   53

54. A sales executive has completed $\frac{3}{5}$ of an 875-mile business trip. How many miles of the trip remain?
   
   A 525  
   B 495  
   C 350  
   D 555  
   
   54
Part 2: Short Response

56 Heather is at an Internet cafe. It costs her an initial charge of $1.25 plus an additional $0.10 each minute she uses their wireless connection to browse the Internet.

Part A
Write and solve an inequality that shows the maximum number of minutes Heather can use the wireless Internet connection with $20 to spend. Let \( x \) = the number of minutes she can use the wireless connection.

Show your work:

Inequality: 

Answer: 

Part B
On the number line below, graph the solution set for the maximum number of hours Heather can use the wireless connection. Be sure you show that you can not browse fewer than zero hours. Show your work.

57 Marley is an avid birdwatcher and is trying to estimate the number of Blue Jays living in his region. He traps 22 Blue Jays and tags them. Later, he traps 550 Blue Jays. Based on the number of tags observed in this group, he determines the Blue Jay population to be 825. What is the best estimate for the number of tagged Blue Jays that were recaptured?

Show your work:

Answer: 

58. The graph shows the distances of three remote control cars over time when racing on a track. Are the graphed lines of each car’s speed proportional to each other?

Explain your reasoning:
59. Patricia went to an amusement park with $60.00. She spent half on her admission ticket and then the \( \frac{2}{3} \) of what was left on food and games. How much money did Patricia go home with?

Show your work:

Answer: $___________

60. Kelsey loves to read fairy tale books. She has read 17 books so far. Each month she reads 3 more.

**Part A**

How many months will it take her to read over 40 books? Write an inequality and solve it.

Show your work:

**Part B**

Graph the solution set for the inequality you wrote in Part A on the number line below.

Inequality: __________

Answer: __________ months

61. Below is a recipe card for chocolate chip cookies.

If Ms. Sweet needs to make 15 dozen cookies for the town meeting, how much of each ingredient will she need? Write your answers on the lines below.

Show your work:

\[
\begin{align*}
\text{1} \frac{1}{2} \text{ cups margarine} & \\
\text{1} \frac{3}{4} \text{ cups sugar} & \\
2 \text{ teaspoons vanilla} & \\
3 \frac{1}{4} \text{ cups flour} & \\
1 \text{ teaspoon baking powder} & \\
\frac{1}{4} \text{ teaspoon salt} & \\
8 \text{ ounces chocolate chips} &
\end{align*}
\]

62. Pam opened a bank account with a $200 deposit. The account had a simple interest rate of 4.6%. Her most recent bank statement showed a balance of $328.80. If she made no deposits or withdrawals, how long ago was the account opened?

Show your work:

Answer: __________ years