8th Grade Math
Summer Packet
Students entering 8th Grade Math

We’ve redesigned the packet and provided a pacing guide for the work beginning the first week of July. We strongly suggest that students work at the suggested pace throughout the summer rather than all at once right after school ends or just before the beginning of the year.

All work should be completed individually. All problems can & should be completed WITHOUT using a calculator (unless stated)

Challenge yourself. Some questions will be simple while others may be difficult. Take your time, show your work and do your best. If you need help, you can use Khan Academy and search the Standards shown in the pacing guide below. Have a wonderful summer and see you in the Fall!

Pacing Guide

<table>
<thead>
<tr>
<th>Week</th>
<th>Questions</th>
<th>Standards Addressed</th>
</tr>
</thead>
<tbody>
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</tr>
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</table>

YOU MUST BRING THIS COMPLETED PACKET WITH YOU ON THE FIRST DAY OF SCHOOL.

Name: ________________________________
Section 1

1. A superhero can fly from New York to Los Angeles in 30 minutes. The distance from New York to Los Angeles is approximately 2450 miles. How many miles per hour is the superhero flying?
   A. $81 \frac{2}{3}$
   B. 1225
   C. 4900
   D. $8166 \frac{2}{3}$

2. Mika read a 405-page book in 6 hours. How many pages per minute did she read?
   A. $\frac{8}{9}$
   B. $1 \frac{1}{6}$
   C. $67 \frac{1}{2}$
   D. 145,800

3. Raphael went to the store and bought $2 \frac{1}{2}$ pounds of chicken for $9.00. What was the cost per pound of the chicken? Round your answer to the nearest cent, if necessary.
   A. $0.28$
   B. $3.60$
   C. $22.50$
   D. $360.00$

4. The table shows the number of flowers used to create bouquets, based on the number of bouquets.

<table>
<thead>
<tr>
<th>Bouquets</th>
<th>Flowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>6</td>
<td>48</td>
</tr>
</tbody>
</table>

Find the rate of change in the table.
   A. 6
   B. 7
   C. 8
   D. 9

5. Trisha uses 3 cups of sugar for every 2 teaspoons of baking soda to make a batch of cookies. Which proportion could be solved to find $x$, the number of teaspoons of baking soda needed for 9 cups of sugar?
   A. $\frac{3}{2} = \frac{x}{9}$
   B. $\frac{3}{2} = \frac{9}{x}$
   C. $\frac{9}{x} = \frac{2}{3}$
   D. $\frac{9}{2} = \frac{3}{x}$
The graph below represents the number of calories burned for every hour of walking.

Calories Burned Walking

Which of the following statements describe the graph shown above? Select two that apply.

A. At 0 hours, 120 calories are burned.
B. To burn 480 calories, an individual must walk for 4 hours.
C. Walking burns calories at a rate of 120 calories per hour.
D. To burn 120 calories, an individual must walk for 2 hours.
E. An individual that walks for 5 hours burns less than 500 calories.
F. An individual that walks for 8 hours burns more than 1000 calories.

Shana owns a clothing store. If Shana adds a 38% markup on all items, what would be the cost of a dress Shana purchased for $24.00 after markup?

A. $9.12  
B. $14.88  
C. $29.12  
D. $33.12

What is 40% of 80?  

Sarah's parents purchased a refrigerator for $320. If sales tax is 7% of the cost, how much tax did Sarah's parents pay for the refrigerator?

A. $2.24  
B. $22.40  
C. $224  
D. $342.40
Directions: Answer the following question(s).

10 \[ \frac{19}{20} - \left( \frac{1}{4} + \frac{1}{5} \right) = \]

13 Which of the following is equivalent to the expression shown?
\((-5)(3)(-4)(-2)\)
A. -120
B. -8
C. -2
D. 120

14 What is the value of the following expression?
\[ \frac{25}{-5} \]

11 Identify the number(s) that make the statement below true.
\(-5.8 + \Box = \) a positive number
A. -2.2
B. 6.3
C. 5.0
D. 5.9
E. -7.3
F. 8.2

12 Which of the following expressions results in a positive number? Select three that apply.
A. \(-6 \cdot (-3) \cdot (-2)\)
B. \(-4 \cdot (-3-1)\)
C. \(-3 \cdot (-8)\)
D. \(-3 \cdot (-2 + 6)\)
E. \(5 \cdot (-1)\)
F. \(6 \cdot (4 - 2)\)

15 Dwight owns 1600 acres of farmland. He wants to split the land into fourths and sell off each of the parcels. Which expression shows the amount of acres that each parcel will contain? Select two that apply.
A. \(1600 \div \frac{1}{4}\)
B. \(1600 \div 4\)
C. \(1600 \cdot \frac{1}{4}\)
D. \(16 \cdot 4\)
E. \(1600 - \frac{1}{4}\)
F. \(1600 + \frac{1}{4}\)
Directions: Answer the following question(s).

16. Which of the following is closest to the solution to the problem below?

\[
\left( 20 \frac{3}{7} \right) \left( 14 \right)
\]

A. 300
B. 140
C. 120
D. 35

17. What is the value of \( \left( \frac{2}{5} \right)^3 \)?

A. \( \frac{6}{125} \)
B. \( \frac{8}{125} \)
C. \( \frac{6}{15} \)
D. \( \frac{6}{5} \)

18. Josh wrote 483 out of an expected 500 words for his essay. How would this ratio be expressed in decimal form?

A. 0.034
B. 0.483
C. 0.966
D. 4.83

19. Which decimal on the number line represents \( \frac{3}{8} \)?

A. 0.125
B. 0.3
C. 0.375
D. 0.8

20. A tour bus travels 255 miles every day. After two weeks, how many miles has the tour bus traveled?

[Blank] miles

21. Anita's family is driving to Colorado. Some of the trip facts are shown below:

<table>
<thead>
<tr>
<th>Distance to Colorado</th>
<th>775 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance Already Traveled</td>
<td>186 miles</td>
</tr>
<tr>
<td>Average Speed</td>
<td>62 mph</td>
</tr>
</tbody>
</table>

Anita's family plans to keep driving at the same average speed for the entire trip. Which of the following are correct? Select three that apply.

A. Anita has been traveling for 3 total hours so far.
B. Anita will travel 1922 total miles roundtrip.
C. Anita has 689 miles left to travel to get to Colorado.
D. It will take 12.5 total hours for Anita to get to Colorado.
E. Anita is more than \( \frac{1}{4} \) of the way done with her trip to Colorado.
F. Anita has more than 3 times as many miles still to travel to get to Colorado compared to miles that she already traveled.
22. Which of the following fractions is equivalent to \((-13) + (−6)\)? Select two that apply.
   A. \(\frac{13}{6}\)
   B. \(\frac{6}{13}\)
   C. \(-2\frac{1}{6}\)
   D. \(2\frac{1}{6}\)
   E. \(\frac{6}{13}\)
   F. \(\frac{13}{6}\)

23. Select two expressions equivalent to \(-42x + 84\).
   A. \(-3(-14x - 28)\)
   B. \(3(-14x + 28)\)
   C. \(-14(3x - 6)\)
   D. \(-14(-3x - 6)\)

24. Which of the following is equivalent to \(3(y - 1 + 2y)\)?
   A. \(3y - 9\)
   B. \(6y - 3\)
   C. \(9y - 3\)
   D. \(3y - 3\)

25. For options A–E choose all of the expressions that are equivalent to \(3(4x + 3)\).
   A. \(12x + 3\)
   B. \(3(3 + 4x)\)
   C. \(7x + 6\)
   D. \(4x + 3 + 4x + 3 + 4x + 3\)
   E. \(12x + 9\)

26. Simplify:
   \(2(-3x - 6)\)

27. Dee's clothing is having a discount of 40% on all shirts.
   Let \(x\) represent the regular price of any shirt in the store. Write an expression that can be used to find the sale price of any shirt in the store.

28. The hardware store is having a 15% off sale on lawn mowers this weekend. If \(x\) is the original price of a lawn mower, what will be the final sales price, excluding tax? Select two that apply.
   A. \(0.15 + x\)
   B. \(x - 0.15\)
   C. \(0.15x\)
   D. \(x - 0.15x\)
   E. \(x(1.00 - 0.15)\)

29. Which of the following is the simplified version of \(3(x + 5) - 6x = 23\)?
   A. \(-3x + 5 = 23\)
   B. \(-3x + 15 = 23\)
   C. \(-15x + 15 = 23\)
   D. \(-9x + 15 = 23\)

30. Which of the following is equivalent to \(63 - 3(2 - 10x) = 150\)?
   A. \(120 - 10x = 150\)
   B. \(120 - 600x = 150\)
   C. \(-10x = 150\)
   D. \(57 + 30x = 150\)
31. Which of the following is a simplified version of $12 - 2(x + 1) = 5$?
   A. $-2x + 10 = 5$
   B. $-2x + 13 = 5$
   C. $10x + 1 = 5$
   D. $10x + 10 = 5$

32. Which of the following is equivalent to $3x - 2(x - 1) > 11 - 9x$?
   A. $x + 2 > 11 - 9x$
   B. $x - 2 > 11 - 9x$
   C. $x + 1 > 11 - 9x$
   D. $x - 1 > 11 - 9x$

33. Lee scored 25 points in yesterday's game. That was 3 more than twice the number of points Alex scored.
   Which equation can be used to find, $a$, the number of points Alex scored?
   A. $25 + 3 = 2a$
   B. $25 = 3 + 2a$
   C. $2(25) + 3 = a$
   D. $2(25) = 3 + a$

34. Amelia's Reliable Fencing Co. prices fences based on the amount of fencing installed plus a fixed amount of $200. The company charges $4 per foot of standard fencing. Which of the following scenarios are correct?
   Select three that apply.
   A. It costs $560 to enclose a 50' by 40' rectangular area.
   B. It costs $680 to enclose a 40' by 20' rectangular area.
   C. It costs $920 to enclose a 60' by 30' rectangular area.
   D. It costs $1040 to enclose a 90' by 40' rectangular area.
   E. It costs $1480 to enclose an 80' by 80' rectangular area.
   F. It costs $2600 to enclose a 10' by 60' rectangular area.
35. Danielle started her postcard collection with 6 cards that she received from her uncle during his trip to France. Danielle's uncle sends her 2 more cards each month as he travels for business. The table below shows the relationship between the number of months Danielle has been collecting cards and the number of cards she has.

<table>
<thead>
<tr>
<th>Number of Months Danielle Has Been Collecting Cards</th>
<th>Number of Cards in the Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>24</td>
<td>?</td>
</tr>
</tbody>
</table>

How many cards can Danielle expect to have after 24 months?

36. Chelsea is budgeting for her trip to the mall. She does not want to spend any more than $140. If she wants to buy a dress that costs $28.50 and some shirts that cost $20.75 each, how many shirts can she buy? Use the inequality to help solve the problem.

\[140 \geq 28.50 + 20.75x\]

A. 10  
B. 7  
C. 6  
D. 5

37. The figure below shows a scale drawing of a Jackie's basement on graph paper.

What is the PERIMETER of her basement if one unit on the graph paper represents 4 feet in real life?

A. 96 feet  
B. 104 feet  
C. 112 feet  
D. 144 feet
Directions: Answer the following question(s).

44 Find the area of the circle below: *Calculator Allowed*

A. 21.98 cm$^2$
B. 38.47 cm$^2$
C. 43.96 cm$^2$
D. 153.86 cm$^2$

45 This circular plate has a radius of 10 cm.

Which equation could be used to find the area of the plate in square centimeters?

A. $A = 10\pi$
B. $A = 20\pi$
C. $A = \pi \cdot 10^2$
D. $A = \pi \cdot 20^2$

46 Sylvia's tambourine has an inner ring with a diameter of 20 centimeters. Which expression can she use to find the inner circumference of the tambourine?

A. $10 \times \pi$
B. $20 \times \pi$
C. $2 \times 20 \times \pi$
D. $20 \times 20 \times \pi$

47 Solve for $x$ and then determine the measure of the exterior angle.

A. $x = 10; 60^\circ$
B. $x = 25; 120^\circ$
C. $x = 40; 180^\circ$
D. $x = 85; 360^\circ$
48. Solve for x.

\[ x = 15^\circ \]

49. Consider the triangle below.

Given that:
\[ \angle CAB = 2x \]
\[ \angle ACB = x + 30^\circ \]
\[ \angle CAB + \angle ACB = 90^\circ \]

Enter the measure of \( \angle CAB \), in degrees.

50. Find the area of the rectangle above.

2 in. \times 6 in.

51. What is the area of the triangle shown above?

52. Lauren is estimating the number of students at her school who like to order pizza from the school's cafeteria. She needs to create a random sample of students. How should Lauren collect her sample?

A. Lauren should visit a pizza restaurant and ask 50 people what their favorite topping is.

B. Lauren should ask the first 50 students who order pizza from the cafeteria.

C. Lauren should ask any 50 students from her school.

D. Lauren should ask 50 students who bring their lunch from home on a day when the cafeteria serves pizza.
A representative sample of 50 students were surveyed about what they preferred on the lunch menu at their school. The table below shows their responses.

<table>
<thead>
<tr>
<th>Lunch Menu</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pizza</td>
<td>14</td>
</tr>
<tr>
<td>Burrito</td>
<td>6</td>
</tr>
<tr>
<td>Burger</td>
<td>8</td>
</tr>
<tr>
<td>Taco</td>
<td>10</td>
</tr>
<tr>
<td>Hot Dog</td>
<td>12</td>
</tr>
</tbody>
</table>

In a group of 250 students, how many students are expected to prefer pizza?

______ students

Frank randomly chose ten different years and looked at the number of snow days at East Middle School and West Middle School. His data for East Middle School are represented by the dot plot, and his data for West Middle School are listed.

Snow Days at East Middle School

![Dot plot]

Snow Days at West Middle School: 6, 0, 4, 3, 2, 1, 6, 6, 0, 4

According to the data, how many more snow days, on average, does East Middle School have per year than West Middle School?
Directions: Answer the following question(s).

55 Two of Mr. Cohen’s science classes are comparing their scores from last week’s test. The results are shown in the dot plot below.

Enter the difference between the median scores of both classes.

points

56 Maria pulls colored marbles out of a bag one at a time. Her results are shown in the table below.

<table>
<thead>
<tr>
<th>Color</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>36</td>
</tr>
<tr>
<td>Yellow</td>
<td>42</td>
</tr>
<tr>
<td>Black</td>
<td>18</td>
</tr>
<tr>
<td>White</td>
<td>24</td>
</tr>
</tbody>
</table>

Based on the outcomes, if 20 more marbles are pulled out of the bag and replaced, how many marbles can be expected to be white?

A. 1
B. 4
C. 5
D. 6

57 There are six sides on a balanced die. Each side is numbered 1 through 6. Jimmy is planning on doing an experiment where he would roll a die 400 times. In theory which of the following should Jimmy expect to get after finishing his experiment?

A. Jimmy should roll more ones than any other number.
B. Jimmy should roll more fives and sixes than any other number.
C. Jimmy should roll approximately the same amount of all numbers on the die.
D. Jimmy should roll odd numbers less than even numbers.