This packet is a general review of important concepts in Grade 8 Math.

In this packet, you’ll find:

A) Practice items from content earlier in the year. Your teachers have the answer key. Check in with them for help or to check your work!

B) Need math help 24/7? Click on this link to Khan Academy. Search by topic to see examples done on video. For example, students could search “factoring quadratics” or “exponential growth and decay” or “rules of logarithms.”

These videos can be found at: https://www.khanacademy.org/

C) Contact your math teacher directly via e-mail or Schoology for questions, help & support. Reach out to your teachers!
Virtual Learning Opportunities – Puyallup Teachers will communicate lessons and activity resources through your child’s Schoology Course or Group. Your child’s teacher is ready to support your student through virtual learning!

Clever- a platform that makes it easier for schools to use many popular educational technology products. Essentially, it is a “bookmark” bar for the educational system- curriculum, support, and accessible links are housed in one location. You can access through PSD Favorites folder in the internet browser on a district issued device.

Schoology- The Puyallup School District platform teachers use to communicate, send course updates, collect assignments and assessments, host Schoology conferences (audio and video) and is the electronic gradebook.

Greetings Parents and Guardians:

This school year, all students in the Puyallup School District will have an account in our new Lear Management System called Schoology. We encourage all parents to set up an account as well.
Solving One-Variable Equations (8.EE.7b)

Solve each equation.

1. \(4x - 12 = 4\)
2. \(-3(2x - 8) = 30\)
3. \(9x - 5 = 2x + 9\)

\[
x = \quad \quad \quad \quad \quad x = \quad \quad \quad \quad x = \quad \quad \quad \quad
\]

4. \(5x - 4 + 7x - 2 = -78\)
5. \(3(x + 5) - 8 = -(2x - 32)\)

\[
x = \quad \quad \quad \quad \quad x = \quad \quad \quad \quad
\]

7. John and Jennifer each solve the equation \(6x - 7 = 29\), but each of them got a different solution. Who solved the equation correctly? Describe the error made by the other student.

<table>
<thead>
<tr>
<th>John's Work</th>
<th>Jennifer's Work</th>
<th>Who is correct?</th>
<th>Describe the other student's error.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6x - 7 = 29)</td>
<td>(6x - 7 = 29)</td>
<td>(6x - 7 = 29)</td>
<td>(6x - 7 = 29)</td>
</tr>
<tr>
<td>(+7)</td>
<td>(-7)</td>
<td>(+7)</td>
<td>(-7)</td>
</tr>
<tr>
<td>(6x = 36)</td>
<td>(6x = 22)</td>
<td>(6x = 36)</td>
<td>(6x = 22)</td>
</tr>
<tr>
<td>(\frac{6x}{6} = \frac{36}{6})</td>
<td>(\frac{6x}{6} = \frac{22}{6})</td>
<td>(\frac{6x}{6} = \frac{36}{6})</td>
<td>(\frac{6x}{6} = \frac{22}{6})</td>
</tr>
<tr>
<td>(x = 6)</td>
<td>(x = \frac{11}{3})</td>
<td>(x = 6)</td>
<td>(x = \frac{11}{3})</td>
</tr>
</tbody>
</table>
8. Solve for $x$.

$$\frac{1}{2}(6x - 10) + 2x = 35$$

$$x = \underline{\phantom{000}}$$

9. What value of $x$ makes the equation true?

$$\frac{x + 6}{4} = 6$$

$\text{O } -14$

$\text{O } -16$

$\text{O } -2$

$\text{O } 18$

10. Sanjeet and his team members were looking at the total points scored by each player during the basketball season. Sanjeet scored three times as many points as Terrence. Cole scored 4 more points than Sanjeet. Together the boys scored 970 points during the entire season. How many points did each boy score?

Use the following equation to help you solve this problem. Let $x$ represent Terrence’s points.

$$x + 3x + 3x + 4 = 970$$

Cole: _______ points

Terrence: _______ points

Sanjeet: _______ points

13. At Shoes for Less, a pair of shoes is $15 less than a pair of boots. Cho purchased two pairs of shoes and three pairs of boots for $150. How much does a pair of boots cost?

A. Which equation could be used to determine the cost of the boots ($b$)? (Circle your answer)

A. $b - 15 + b = 150$

B. $2(b - 15) + 3b = 150$

C. $3(b - 15) + 2b = 150$

D. $5b - 15 = 150$

B. What is cost of a pair of boots? $\underline{\phantom{000}}$
1. Indicate whether the equation has no solution, one solution, or infinitely many solutions.

<table>
<thead>
<tr>
<th>Equation</th>
<th>No Solution</th>
<th>One Solution</th>
<th>Infinitely Many Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (6x + 14 = 14)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (8x + 10 = 8x - 10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. (12x + 2 = 12 + 2x)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. (6 + 5x = 5x + 6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. (-3x - 21 = 3x + 21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. (x - 7 = 7 + x)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tell whether the following equation has one solution, no solution, or infinitely many solution. Show your work.

2. \(2(x + 4) + 6x = 12x + 8 - 3x\)

3. \(3 + 8x - 12 = 5x + 3(x - 4)\)

4. Write a number in each blank to create an equation that has infinitely many solutions.

\[2(4x + 3) = \underline{\text{__________}} x + \underline{\text{__________}}\]

5. Write a number in each blank to create an equation that has no solution.

\[9x - 5x + 7 = \underline{\text{__________}} x + \underline{\text{__________}}\]

6. Kim is solving the following linear equation: \(12 + 4x - 8 = 6x + 7 - 2x\)

Her final two steps are:

\[4 + 4x = 4x + 7\]
\[4 = 7\]

Select the statement that correctly interprets Kim’s solution. (Circle your answer)

A. There are infinitely many solutions since \(4 = 7\) is a false statement

B. The solution is \(x = 2\)

C. The solution is the ordered pair \((4, 7)\)

D. There is no solution since \(4 = 7\) is a false statement
1. Create triangle $A'B'C'$ by reflecting triangle $ABC$ over the y-axis on the coordinate plane. What are the new coordinates of the vertices?

$A'$ ( _____ , _____ )

$B'$ ( _____ , _____ )

$C'$ ( _____ , _____ )

2. Create triangle $A'B'C'$ by rotating triangle $ABC$ 90° clockwise around the origin on the coordinate plane. What are the new coordinates of the vertices?

$A'$ ( _____ , _____ )

$B'$ ( _____ , _____ )

$C'$ ( _____ , _____ )

2. Create triangle $A'B'C'$ by translating triangle $ABC$ left 4, up 2 on the coordinate plane. What are the new coordinates of the vertices?

$A'$ ( _____ , _____ )

$B'$ ( _____ , _____ )

$C'$ ( _____ , _____ )
3. Create triangle $A'B'C'$ by **dilating** triangle $ABC$ by a scale factor of 2 on the coordinate plane. What are the new coordinates of the vertices?

Find the new coordinates of the identified point after the given transformation.

4. Reflect: Over the y-axis

5. Translate: Down 5, Left 2

6. Dilate: Scale factor of .5

7. Rotate: $90^\circ$ Counterclockwise
Chapter 9: Math 8 – Geometry (G)
Analyzing Transformations (8.G.1, 8.G.2, 8.G.4)

Name _______________________
Date _____________ Class Period ______

1. Triangle ABC is reflected over a vertical line to create its mirror image. Use the measurements shown in the original triangle to label all three angle measurements in the image.

2. Use transformations to prove that the figures are congruent.

3. Use transformations to prove that the two figures are similar. Shape A is the original image.
4. Triangle ABC is reflected over the y-axis and then translated down 5 units to create triangle A'B'C'.

Determine whether each statement below is true or false.

<table>
<thead>
<tr>
<th>Statements</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle C has the same measure as angle C'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side AC is the same length as side A'C'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Side BC is shorter than side B'C'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Which picture shows a rotation of rhombus ABCD? (Fill in the bubble to the left of the picture that you believe shows a rotation.)

A. O

B. O

C. O

D. O
Determine whether or not the following relationships are proportional.

1. Is the relationship proportional? Yes / No

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>1</td>
</tr>
<tr>
<td>-1</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

2. Is the relationship proportional? Yes / No

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>-8</td>
</tr>
<tr>
<td>-1</td>
<td>-4</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

3. Is the relationship proportional? Yes / No

4. Is the relationship proportional? Yes / No

Calculate the slope for each of the following. Leave answer as a fraction. Show your work!

5. Slope =

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>23</td>
<td>14</td>
</tr>
</tbody>
</table>

6. Slope =

Through the points: (3, 6) and (-2, 12)
Calculate the slope of the line using...

8. Points K and M

9. Points J and K

8. If the three turtles moved according to the data given, in what order would they finish a race?

Turtle 1: 32 inches every 12 minutes

1st Place: _______________________

Turtle 2:

2nd Place: _______________________

3rd Place: _______________________

Turtle 3:

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Distance (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>20</td>
<td>39</td>
</tr>
</tbody>
</table>
Identify the slope and y-intercept for each equation.

1. \( y = -2x + 4 \)
   
   Slope = _________
   
   Y-Intercept = _______

2. \( y = 10 - 5x \)
   
   Slope = _________
   
   Y-Intercept = _______

3. \( y = \frac{5}{2}x \)
   
   Slope = _________
   
   Y-Intercept = _______

4. \( y = \frac{2}{3} + 6x \)
   
   Slope = _________
   
   Y-Intercept = _______

Write the equation in slope-intercept form of the line with the given slope and y-intercept.

5. Slope = -3  Y-Intercept = 1
   
   Equation: ____________________

6. Slope = \( \frac{4}{9} \)  Y-Intercept = -2
   
   Equation: ____________________

Write an equation in slope-intercept form for each of the following linear relationships.

7. Equation: ____________________

8. Equation: ____________________

<table>
<thead>
<tr>
<th>( x )</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>( x )</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

9. Equation: ____________________

Through the points (-1, 1) and (-3, 5)
10. Equation: __________________________

A swimming pool with 1400 gallons of water is emptied at a rate of 250 gallons every 5 hrs.

11. Equation: __________________________

12. Equation: __________________________

13. Jeremy wrote the equation \( y = 1 - 2x \) based on the graph below.

Why is Jeremy’s equation incorrect?

A. The slope of the graph is 2  
B. The y-intercept of the graph is 0  
C. The slope of the graph is negative  
D. The y-intercept of the graph is -2 and the slope is 1

14. Peter has a checking account that he uses to pay for his monthly subscription to Netflix. The graph below represents the total amount of money in his account after each month.

a. What is the slope of the line? __________________________

What does the slope mean in the context of the situation?

b. What is the y-intercept of the line? __________________________

What does the y-intercept mean in the context of the situation?
Find the solution point.

1. Solution: ( _____ , _____ )

Determine whether the given point is a solution to the given system of linear equations. Show ALL your work.

2. Two lines are graphed on the same coordinate plane. The lines only intersect at the point (2, 5). Which of these systems of linear equations could represent the two lines? Select ALL that apply.

A. \( x = y - 2 \\
   y = 2x + 1 \)

B. \( x = 2 \\
   y = 5 \)

C. \( x = 2y - 8 \\
   y = 3x - 1 \)

D. \( x = 3 + y \\
   y = 2 + x \)

E. \( y = 4x - 3 \\
   y = 2x + 1 \)

F. \( y = x + 3 \\
   x + y = 7 \)

3. Michelle was asked to graph a system of two linear equations that has a single solution of (-2, 3). She created the graph to the right.

Describe Michelle's error. _____________________________________________
   _____________________________________________
   _____________________________________________
   _____________________________________________

Name _______________________________
Date ___________ Class Period ________
Solve the following systems of linear equations by graphing.

4. \[ y = \frac{1}{2}x + 3 \]
   \[ y = 2x - 2 \]

   Solution: ( _____ , _____ )

5. \[ x - y = -4 \]
   \[ y = 3x + 2 \]

   Solution: ( _____ , _____ )

5. The solution of a system of two linear equations is (4, -2). On the coordinate grid, graph two lines that could be the graphs of the two linear equations in the system. Then write an equation for each line.

   Equation 1: ___________________________

   Equation 2: ___________________________
1. Determine whether the following systems of linear equations will have one solution, no solution, or infinitely many solutions.

<table>
<thead>
<tr>
<th>System of Linear Equations</th>
<th>System of Linear Equations</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y = -5x + 4$ \n$y = -5x - 2$</td>
<td>$y = -2x + 7$ \n$y = x + 3$</td>
</tr>
<tr>
<td>$y = -\frac{2}{3}x + 4$ \n$2x + 3y = 12$</td>
<td>$y = \frac{1}{2}x + 5$ \n$-4x + 6y = 30$</td>
</tr>
</tbody>
</table>

Solve each system using the substitution method. Show ALL your work.

2. $y = 2x + 6$ \n$y = -4x - 6$ 
Solution: ( _____ , _____ )

3. $y = -3x - 9$ \n$-4x + y = 12$ 
Solution: ( _____ , _____ )

Solve each system using the elimination method. Show ALL your work.

2. $x + 2y = -10$ \n$-x + 2y = 2$ 
Solution: ( _____ , _____ )

3. $2x - 4y = 6$ \n$3x + 4y = 9$ 
Solution: ( _____ , _____ )
9. A system of two linear equations has **INFINITELY MANY SOLUTIONS**. If the first equation is \( y = -2x + 4 \), then what would be the second equation?

A. \( 2x - y = 4 \)  
B. \( 2x + y = 4 \)  
C. \( 4x - y = 10 \)  
D. \( 4x + y = 8 \)

10. Select the statement that correctly describes the solution to this system of equations.

\[
\begin{align*}
  y &= -2x + 3 \\
  x - 3y &= -2
\end{align*}
\]

A. There is no solution  
B. There are infinitely many solutions  
C. There is exactly one solution at (-2, 3)  
D. There is exactly one solution (1, 1)

11. Line A is shown on the coordinate grid. Jordan was asked to construct line B so that:

- Line A and line B represent a system of linear equations with a solution at (2, 2)
- The slope of line B is less than 1
- The slope of line B is greater than zero
- The y-intercept of line B is negative

Does Jordan’s line meet the above requirements? Explain why or why not?

13. Xavier and Carlos have a bet to see who can get more “friends” on a social media side after 1 month. Carlos has 10 more friends than Xavier when they start the competition. After much work, Carlos doubles his amount of friends and Xavier triples his. In the end they have a total of 160 friends.

a. Write a system of equation that matches the verbal description given below if \( c \) = number of Carlos’ friends and \( x \) = number of Xavier’s friends.

\[
\begin{align*}
  \text{Equation 1:} & \quad \text{Carlos has 10 more friends than Xavier} \\
  \text{Equation 2:} & \quad \text{Carlos doubles his amount of friends and Xavier triples his. They have a total of 160 friends}
\end{align*}
\]

b. Solve the system.

After 1 month, Carlos has ______ friends and Xavier has ______ friends.
1. Which graphs represent functions? Select all that apply.

2. Which of the following relations represent functions? Select all that apply.

3. A relationship between $x$ and $y$ is defined by the equation $y = -\frac{1}{2}x + 7$, where $x$ is the input and $y$ is the output. Which statements about the relationship are true? Select each statement.

- The relationship is a function
- The graph of the relationship is a line
- When the input is 5, the output is 4
- When the input is -2, the output is 8
- The $y$-intercept of the relationship is (0, -7)
- The slope of this line is negative

4. Which of the following table of values can be defined by the function $y = 3x + 2$? Select all that apply.
5. Which graphs are linear? Select all that apply.

6. Determine whether each statement about linear relationships is always, sometimes, or never true.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>The equation $y = mx + b$ generates a linear graph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear graphs are functions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A diagonal line has a consistent rate of change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A vertical line has a $y$-intercept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a curve on a linear graph</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Use the graph at the right to answer the following questions?

<table>
<thead>
<tr>
<th>Graph A</th>
<th>Graph B</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the input is 2, what is the output? ___________</td>
<td>If the input is 4, what is the output? ___________</td>
</tr>
<tr>
<td>If the output is -5, what is the input? ___________</td>
<td>If the output is -2, what is the input? ___________</td>
</tr>
</tbody>
</table>

8. Which equations represent linear functions? Select all that apply.

- $8x = 2.3y + 9$
- $y = 5x - 4^2$
- $y = 5 \cdot 2^x$
- $y = \frac{5}{x}$
- $y = 9 - \frac{x}{2}$
- $y = 6x^2 + 1$