1. Brittany is working on getting in shape for tennis season. The coaches tell her she needs to run 2 km three times a week. If she does this for 12 weeks, how many meters will she run?

A. 6 m
B. 72 m
C. 36,000 m
D. 72,000 m

2. The numbered steps show one way to solve an equation. What property was used to go from Step 2 to Step 3?

   Step 1: \( \frac{z-6}{2} + 3 = 17 \)
   Step 2: \( \frac{z-6}{2} = 14 \)
   Step 3: \( z-6 = 28 \)
   Step 4: \( z = 34 \)

A. Commutative Property of Multiplication
B. Addition Property of Equality
C. Multiplication Property of Equality
D. Distributive Property

3. Gloria earns 1.5 times her normal hourly pay for each hour that she works over 40 hours in a week. Her normal pay is \( p \) dollars per hour. Last week Gloria worked 47 hours and earned $489.85. The following equation represents this situation where \( p \) is Gloria’s normal hourly pay in dollars per hour.

\[
40p + 7(1.5p) = 489.85
\]

What is Gloria’s normal hourly pay?

A. $ 5.90   C. $ 8.70
B. $ 6.95   D. $ 9.70
4. What values of $x$ make the equation $-7x = 18 - x^2$ true?

A. $x = 9$ and $x = -2$
B. $x = -6$ and $x = 3$
C. $x = -3$ and $x = 6$
D. $x = 2$ and $x = 9$

5. Which system of equations would result in the elimination of the $x$-value?

A. $4(2x + 5y = 15)$
   $-5(3x + 4y = 19)$
B. $-2(2x + 5y = 15)$
   $3(3x + 4y = 19)$
C. $3(2x + 5y = 15)$
   $-2(3x + 4y = 19)$
D. $-5(2x + 5y = 15)$
   $4(3x + 4y = 19)$

6. Which student created an example of a product that is irrational?

<table>
<thead>
<tr>
<th></th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penny</td>
<td>$\sqrt{10} \cdot \sqrt{10}$</td>
</tr>
<tr>
<td>Noah</td>
<td>$\sqrt{36} \cdot \sqrt{4}$</td>
</tr>
<tr>
<td>Eli</td>
<td>$\sqrt{16} \cdot \sqrt{64}$</td>
</tr>
<tr>
<td>Jose</td>
<td>$\sqrt{14} \cdot \sqrt{26}$</td>
</tr>
</tbody>
</table>

A. Penny
B. Noah
C. Eli
D. Jose
7. Combine all of the like terms in the following expression: $5x^2 + 7x -8(x + 1) - 2x^2$.

A. $x^2 + 10x + 5$
B. $3x^2 - x - 8$
C. $8x^2 + 10x + 5$
D. $15x^4 - 8x - 8$

8. Simplify the expression $(4x + 7)^2$.

A. $16x^2 + 56x + 49$
B. $16x^2 + 49$
C. $16x^2 - 56x + 49$
D. $16x^2 - 49$

9. What is the vertex form of the quadratic equation $y = x^2 + 4x - 1$?

A. $y = (x + 4)^2 - 1$
B. $y = (x + 2)^2 + 3$
C. $y = (x + 4)^2 - 17$
D. $y = (x + 2)^2 - 5$

10. Which is an equivalent form of the expression $25x^2 - 4$?

A. $(5x + 2)(5x - 2)$
B. $(25x + 2)(x - 2)$
C. $(5x - 2)^2$
D. $(5x + 2)^2$
11. Given the function \( f(x) = 4(1/2)^x + 5 \), what is the **range**?

A. \( y < 5 \)
B. \( y < 4 \)
C. \( y > 5 \)
D. \( y > 4 \)

12. The function \( h(t) \) gives the height in feet of a rocket as a function of the time \( t \) in seconds since its launch. What is an appropriate domain for the function \( h(t) \)?

A. All real numbers
B. All positive real numbers
C. All integers
D. All positive integers

13. Graph the function \( y = 2x^2 - 4x - 6 \)

A. 

B. 

C. 

D.
14. Which of the following statements regarding the two functions below is true?

![Function 1 and Function 2 graphs]

A. Function 1 and Function 2 have the same y-intercept.
B. Function 1 and Function 2 have the same range.
C. Function 1 and Function 2 have the same asymptote.
D. Function 1 and Function 2 have the same minimum.

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15. Write an explicit formula to describe the arithmetic sequence from the pattern above.

\[ n = 1 \quad n = 2 \quad n = 3 \]

A. \( f(n) = n + 4 \)
B. \( f(n) = 4n + 1 \)
C. \( f(n) = n + 1 \)
D. \( f(n) = 4n + 4 \)
16. The amount of coal produced by Western Mining has increased by 5% every year for the past 10 years. Western Mining produced 50,000 tons of coal 10 years ago.

Which equation describes the annual coal production for Western Mining during the past 10 years (where \( t \) represents time in years)?

A. \( f(t) = 50,000(0.05t) \)
B. \( f(t) = 50,000 + 2500t \)
C. \( f(t) = 50,000(0.05)^t \)
D. \( f(t) = 50,000(1.05)^t \)

17. Two farmers, Art and Julie, each have 20 egg-laying chickens. The number of eggs each farmer received from their chickens every day for six months is shown.

\[ \text{Art's Chickens} \]
\[ \begin{array}{cccccc}
10 & 13 & 15 & 18 & 20 \\
\end{array} \]

\[ \text{Julie's Chickens} \]
\[ \begin{array}{cccccc}
13 & 15 & 17 & 19 & 22 \\
\end{array} \]

Eggs Per Day

Which statement is TRUE based on the information shown?

A. On average Julie gets two more eggs per day than Art.
B. Julie has only one chicken that produces 22 eggs per day.
C. They both have 5 chickens that produce between 13 and 15 eggs per day.
D. Art has more chickens producing between 15 and 18 eggs than between 13 and 15 eggs.
18. A fast-food restaurant wants to determine whether the season of the year affects the choice of soft-drink size purchased. It surveyed 278 customers, and the table below shows its results. The drink sizes were small, medium, large, and jumbo. The seasons of the year were spring, summer, and fall. In the body of the table, the cells list the number of customers who fit both row and column titles. On the bottom and in the right margin are the totals.

<table>
<thead>
<tr>
<th></th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>24</td>
<td>22</td>
<td>18</td>
<td>64</td>
</tr>
<tr>
<td>Medium</td>
<td>23</td>
<td>28</td>
<td>19</td>
<td>70</td>
</tr>
<tr>
<td>Large</td>
<td>18</td>
<td>27</td>
<td>29</td>
<td>74</td>
</tr>
<tr>
<td>Jumbo</td>
<td>16</td>
<td>21</td>
<td>33</td>
<td>70</td>
</tr>
<tr>
<td>TOTALS</td>
<td>81</td>
<td>98</td>
<td>99</td>
<td>278</td>
</tr>
</tbody>
</table>

What percentage of those surveyed purchased small drinks?

A. 29%
B. 23%
C. 18%
D. 12%

19. A restaurant models its profit in dollars per hour using a line of best fit with the number of customers per hour as the predictor variable. They create the following model: \( y = 14.78x - 235.57 \). Which of the following correctly states the meaning of the \( y \)-intercept of the model equation?

A. If zero customers come in, the restaurant makes $235.57 in profit in an hour.
B. If there are zero customers in one hour, the restaurant loses $235.57.
C. The restaurant will make at least $235.57 each hour.
D. The restaurant will not lose money if it has more than zero customers per hour.

20. What of the following statements describes a causal relationship?

A. An increase in sunny days and an increase in sunglass sales.
B. The number of stamps sold and the number of letters mailed.
C. An increase in wins by the high school basketball team and the number of tickets sold.
D. An increase in minutes exercising and the number of calories burned.
Consider the following table above that displays how long a person works at a particular job and how much they get paid per hour.

**Part A:** What type of sequence would this table represent?

**Part B:** Explain how you determined your answer in Part A.

*(NOTE: Your teacher will score your response to this item using a 2 point rubric.)*

Consider the following table above that displays how long a person works at a particular job and how much they get paid per hour.

**Part C:** Create an explicit rule that represents the sequence in the table.

**Part D:** How much money would a person make, per hour, after 7 years?

*(NOTE: Your teacher will score your response to this item using a 2 point rubric.)*