THINKING AND COMMUNICATING IN MATHEMATICS
SIMULATION TEST OF INTRAMAPS – 2023-3
CYCLE: III. GRADE: SIXTH

Thinking and communicating using variables and algebraic expressions
Can use algebraic expressions to represent contextualized situations or to represent and evaluate number patterns.

BASIC LEVEL

For questions 1 to 4, choose the algebraic expression corresponding to the given operation.

1. Add a and 7.

   A. $a - 7$.
   B. $7a$.
   C. $a + 7$.
   D. $a \cdot 7$.

2. Subtract b from 4.

   A. $b - 4$.
   B. $\frac{b}{4}$.
   C. $4 - b$.
   D. $4 + b$.

3. Multiply c and 8.

   A. $\frac{8}{c}$.
   B. $c + 8$.
   C. $\frac{c}{8}$.
   D. $8c$.

4. Divide d by 9.

   A. $\frac{d}{9}$.
   B. $9d$.
   C. $d - 9$.
   D. $\frac{9}{d}$.



5. What is the value of the given algebraic expression when $y = 20$.

   $$12 - y$$

   A. -8.
   B. 32.
   C. 8.
   D. -32.

HIGH LEVEL

For questions 6 to 8, find the value of each algebraic expression when $x = 8$. *Write the process in the box.*

6. $\frac{9x}{3}$.

$$\frac{9x}{3} = \frac{9 \cdot \square}{3} = \frac{\square}{3} = \square$$

7. $\frac{40-x}{2}$.

$$\frac{40 - x}{2} = \frac{40 - \square}{2} = \frac{\square}{\square} = \square$$

8. $32 - \frac{11x}{4}$.

$$32 - \frac{11x}{4} = 32 - \frac{11 \cdot \square}{4} = 32 - \frac{\square}{\square}$$
$$= \square - \square = \square$$

UPPER LEVEL

9. Camilo has a string that was x meters long. Camilo's string was three times as long as Oriana's string. Oriana used 1 meter of her string to tie a gift. Find the length of string that Oriana had left if the length of Camilo's string was 18 meters.

   In the box, express the length as an algebraic expression in terms of x, and then find its value when $x = 18$.

LIVEWORKSHEETS

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If Camilo's string was ☐ times as long as Oriana's string, then Oriana's string was the ☐ part as long as Camilo's string.

So, if Camilo's string was x meters long, then Oriana's string was $\frac{\square}{\square}$ meters long.

Now, if Oriana took 1 meter from her string, she had left $\frac{\square}{\square} - \square$ of string.

Finally, we are going to find the value of that equation when $x =$ ☐,

$$\frac{\square}{\square} - \square = \square - \square = \square$$

Answer: Oriana had left ☐ meters of string.

10. Alejandra had $7000 COP. She saved $\$y$ COP and spent the remaining amount of money equally on 3 games. Find the amount of money she spent on each game if she saved $2500 COP. *In the box, express the amount of money as an algebraic expression in terms of y, and then find its value when $y = 2500$.*

If Alejandra had $7000 and saved $\$y$, then the remaining amount of money was $7000 - \square$. If she spent that money equally on ☐ games, to know the amount of money she spent on each game, we need to ☐ $7000 - \square$ by ☐:

$$\frac{7000 - \square}{\square}$$

Finally, we are going to find the value of that equation when $y =$ ☐,

$$\frac{7000 - \square}{\square} = \frac{\square}{\square} = \square$$

Answer: Alejandra spent $☐ COP on each game.

Thinking and communicating spatial properties using geometric systems

Can apply basic geometrical concepts for lines and angles to solve contextualized problems.

BASIC LEVEL

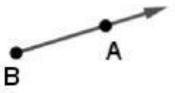
11. Which type of geometric object corresponds to the following representation?



Made by the teacher.

A. Line.
B. Plane.
C. Ray.
D. Line segment.

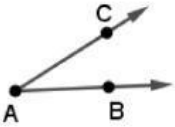
12. What could be an appropriate name for the following geometric object?



Made by the teacher.

A. $\overrightarrow{AB}$. B. $\overleftrightarrow{AB}$. C. $\overrightarrow{BA}$. D. $\angle BA$.

13. What could be an appropriate name for the following geometric object?



Made by the teacher.

A. $\angle ABC$. B. $\overleftrightarrow{CAB}$. C. $\angle ACB$. D. $\angle CAB$.

14. What could be an appropriate name for the following geometric object?



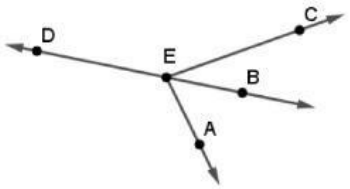
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A. $\overrightarrow{SLB}$. B. $\overrightarrow{S}$. C. $\overleftrightarrow{SB}$. D. $\overrightarrow{SB}$.

LIVEWORKSHEETS

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15. According to the image below, which of the following statements is TRUE?



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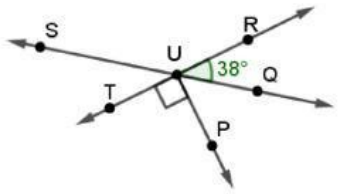
A. $\angle AEB$ and $\angle BEC$ are linear pair angles.
B. $\angle AEB$ and $\angle CED$ are vertically opposite angles.
C. B, E and D are collinear points.
D. $\angle CED$ is an acute angle.

HIGH LEVEL

16. Choose True or False as appropriate.

- If two lines are intersecting lines, they just share one point.
- If X and Y are different points, it is **impossible** that two different lines pass through them.
- If S, T and U are noncollinear points, there is just one plane that contains them.

For questions 17 and 18, choose the option that completes the statements properly, according to the given representation.



Made by the teacher.

17.

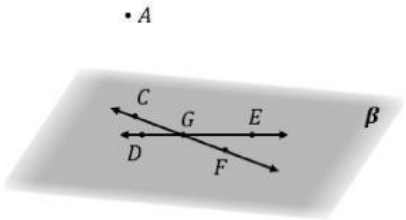
- $\angle TUP$ and $\angle PUR$ are _____.
- $\angle PUQ$ and $\angle$ _____ are complementary.
- $\angle QUR$ and $\angle TUS$ are _____.
- $\angle TUS$ and $\angle$ _____ are complementary.

18.

- $\angle PUR$ measures ____°.
- $\angle TUS$ measures ____°.
- $\angle PUQ$ measures ____°.

UPPER LEVEL

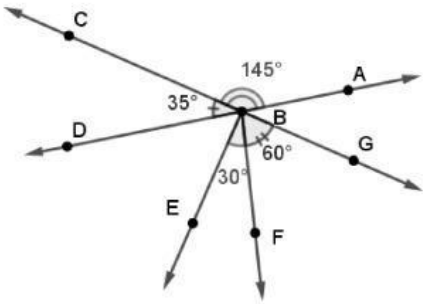
19. According to the following representation, complete the statements with the proper option.



Made by the teacher.

- The point A _____ to the plane β.
- C, D, E, F and G are _____ points.
- $\angle FGE$ and $\angle DGC$ are _____
- $\angle DGF$ and $\angle$ _____ are vertically opposite angles.
- $\angle DGF$ and $\angle$ _____ are linear pair angles.
- $\angle CGE$ and $\angle FGE$ are _____.

20. According to the following representation, complete the statements below.



Made by the teacher.

- Name a pair of complementary angles:
  - $\angle GBF$ and $\angle$ _____
- Name 2 different linear pair angles:
  - $\angle DBE$ and $\angle$ _____
  - $\angle GBF$ and $\angle$ _____

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- Name 2 different pairs of vertically opposite angles:
  - $\angle GBA$ and $\angle$
  - $\angle ABC$ and $\angle$
- Complete the following statements.
  - $\angle ABG$ measures ____°.
  - $\angle GBD$ measures ____°.
  - $\angle DBE$ measures ____°.
  - $\angle EBA$ measures ____°.
  - $\angle FBC$ measures ____°.

Thinking and communicating measurable attributes using metrical system
Can classify polygons and calculating their area and perimeter to solve contextualized problems.

BASIC LEVEL

21. Triangles, quadrilaterals, pentagons, hexagons, and so on, are types of polygons using a classification by:

    A. Number of sides.
    B. Measure of sides.
    C. Measures of angles.

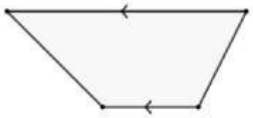
22. If a polygon has 7 sides, it can be called:

    A. Octagon.
    B. Hexagon.
    C. Nonagon.
    D. Heptagon.

23. If a polygon has congruent interior angles and congruent sides too, which kind of polygon is it?

    A. Regular.
    B. Irregular.

24. Which of the following statements is FALSE about the quadrilateral represented?



Made by the teacher

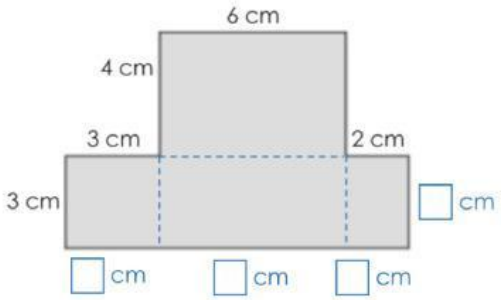
    A. It has only one pair of parallel sides.
    B. It is a trapezoid.
    C. It has two pairs of parallel sides.
    D. It is not a parallelogram.

25. Which of the following statements is FALSE?

    A. Any square is a rhombus.
    B. Any square is a rectangle.
    C. Any square is a parallelogram.
    D. Any square is a trapezoid.

HIGH LEVEL

26. In the following figure, all sides meet at right angles. What is the perimeter of that figure? *Write the process in the box.*



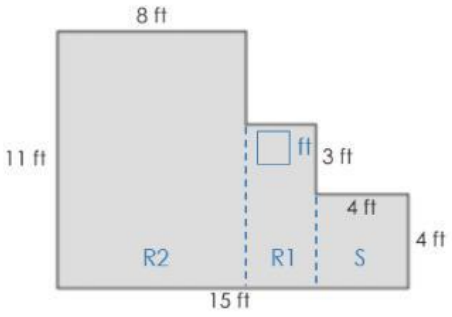
Taken from: PR1ME Mathematics 6th grade. Edited by the teacher

Once you have written the missing measures of sides, we are going to add the measures of ALL the sides, because that is the definition of perimeter.

$$P = 6 + 4 + 3 + 3 + \square + 6 + \square + 3 + 2 + \square$$

$$P = \square \text{ cm}$$

27. In the following figure, all sides meet at right angles. What is the area of that figure? *Write the process in the box.*



Taken from: PR1ME Mathematics 6th grade. Edited by the teacher

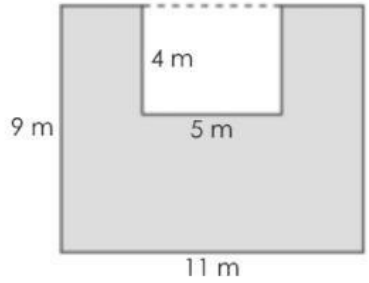
LIVEWORKSHEETS

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We can imagine the figure composed by a square and two rectangles. Thus, the area of the figure is the addition of the areas of the square, the rectangle 1 and the rectangle 2:

$$A = A_S + A_{R1} + A_{R2}$$
$$A = (4 \times \square) + (3 \times \square) + (8 \times \square)$$
$$A = \square + \square + \square$$
$$A = \square \text{ ft}^2$$

28. In the following figure, all sides meet at right angles. Find the perimeter and area of that figure. *Write the process in the box.*



Taken from: PR1ME Mathematics 6th grade.

To find the perimeter, we need to add the measures of all the sides:

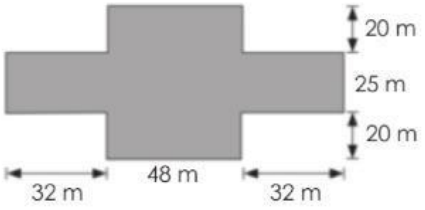
$$P = 9 + 11 + \square + 11 + 4 + \square$$
$$P = \square \text{ m}$$

To find the area of the shaded figure, we can subtract the area of the small rectangle (A_{SR}) from the area of the big rectangle (A_{BR}).

$$A = A_{BR} - A_{SR}$$
$$A = (9 \times \square) - (4 \times \square)$$
$$A = \square - \square$$
$$A = \square \text{ m}^2$$

UPPER LEVEL

29. Lizeth wants to place a carpet as shown in an exhibition hall. What is the perimeter of the carpet?



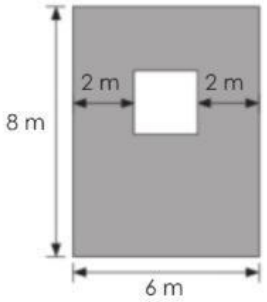
Taken from: PR1ME Mathematics 6th grade.

The perimeter of the figure is the addition of the measures of all the sides:

$$P = 32 + \square + 48 + 20 + \square + 25 + 32$$
$$+ \square + 48 + 20 + 32 + \square$$
$$P = \square \text{ m}$$

Answer: The perimeter of the carpet is $\square$ m.

30. Sofía wants to put wallpaper on one side of a wall of her cafe. There is a square window in the wall. If each square meter of wallpaper costs $15, how much will it cost to put wallpaper on the wall completely?



Taken from: PR1ME Mathematics 6th grade.

We need to find the area of the wall (A_W) and then multiply it by the cost of 1 square meter.
To find the area, we can subtract the area of the square window (A_S) from the area of the big rectangle (A_R).

$$A_W = A_R - A_S$$
$$A_W = (6 \times \square) - (\square \times \square)$$
$$A_W = \square - \square$$
$$A_W = \square \text{ m}^2$$

To know the cost, we multiply the area by the cost of 1 square meter:

$$\square \text{ m}^2 \cdot \frac{\$15}{1 \text{ m}^2} = \$\square$$

Answer: The cost to put wallpaper is $\$\square$.



LIVEWORKSHEETS