TEST NAME: **math 1 jan 24**
TEST ID: **2825270**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

Class: _____

Date: _____

1. **Which table BEST represents the relationship between *n*, the position of the term in a sequence, and the value of the term defined by the rule** $5n - 3$?

   A.

   | Position | 1 | 2 | 3 | 4 | n |
   |---|---|---|---|---|---|
   | Value of Term | 8 | 13 | 18 | 23 | |

   B.

   | Position | 1 | 2 | 3 | 4 | n |
   |---|---|---|---|---|---|
   | Value of Term | 2 | −1 | −4 | −7 | |

   C.

   | Position | 1 | 2 | 3 | 4 | n |
   |---|---|---|---|---|---|
   | Value of Term | 2 | 7 | 12 | 17 | |

   D.

   | Position | 1 | 2 | 3 | 4 | n |
   |---|---|---|---|---|---|
   | Value of Term | 5 | 10 | 15 | 20 | |

2. **A sequence is defined recursively as follows.**

$$f(1) = 6$$

$$f\left(n\right) = \tfrac{1}{3}f(n-1)$$

   **What are the first five terms of this sequence?**

   A. $6, 2, \dfrac{2}{3}, \dfrac{2}{9}, \dfrac{2}{27}$

   B. $6, 2, \dfrac{1}{6}, \dfrac{1}{18}, \dfrac{1}{54}$

   C. $6, 6\dfrac{1}{3}, 6\dfrac{2}{3}, 7, 7\dfrac{1}{3}$

   D. $6, 6\dfrac{1}{3}, 6\dfrac{1}{9}, 6\dfrac{1}{27}, 6\dfrac{1}{81}$
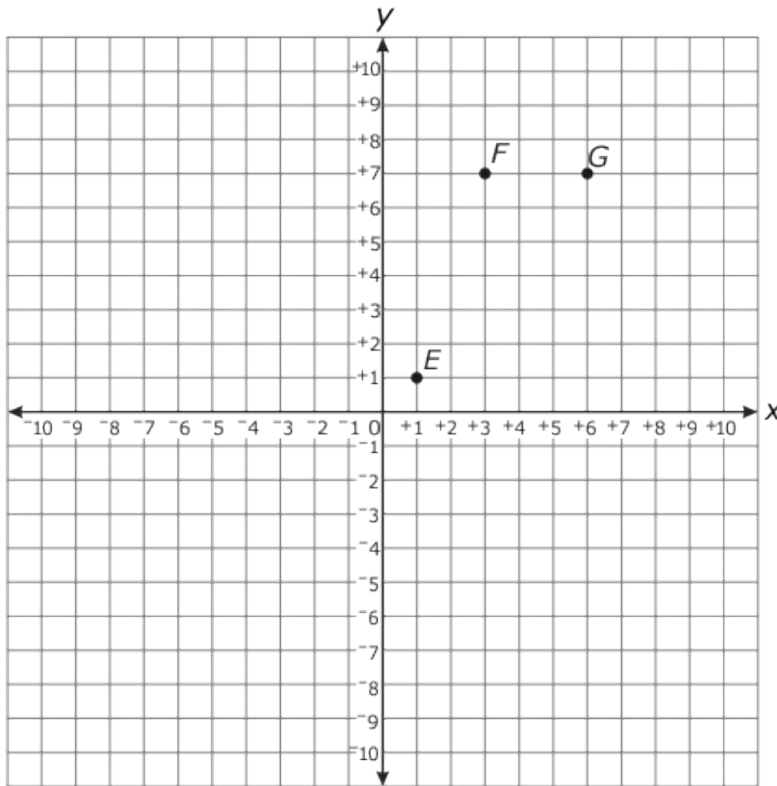
3. **A sequence is defined recursively as follows.**

$$a_1 = 8$$

$$a_{n+1} = 0.5a_n$$

What is the value of $a_7$ ?

A. 0.125
B. 0.25
C. 2
D. 4

4. If *EFGH* is an isosceles trapezoid, what are the coordinates of *H*?



A. (4, 1)
B. (5, 1)
C. (7, 1)
D. (8, 1)

5. The graph of the line $y = {}^-3x + 12$ intersects the $x$-axis and $y$-axis to form a triangle. What is the **approximate** perimeter of the triangle?

   A. 13 units

   B. 16 units

   C. 29 units

   D. 45 units

6. Which set of coordinates could be the vertices of an isosceles triangle?

   A. $(1, {}^-7), (1, {}^-3), (4, {}^-2)$

   B. $(0, 2), (3, 3), (3, 7)$

   C. $({}^-1, {}^-6), (1, {}^-3), (4, {}^-1)$

   D. $({}^-4, 2), (3, 3), ({}^-1, 7)$

7. Which is an equation of a line perpendicular to the graph of $2x - 3y = 17$?

   A. $2x - 3y = 7$

   B. $3x - 2y = 17$

   C. $4x + 6y = 19$

   D. $6x + 4y = 9$

8. What is the slope of a line that is parallel to the $y$-axis?

   A. $^-1$

   B. 0

   C. 1

   D. undefined

9. Which is an equation of the line parallel to $2y - 6x = {}^-2$ that passes through the point $(2, {}^-1)$?

A. $y = 3x - 5$

B. $y = 3x + 5$

C. $y = 3x - 7$

D. $y = 3x + 7$

10. A linear function is shown below.
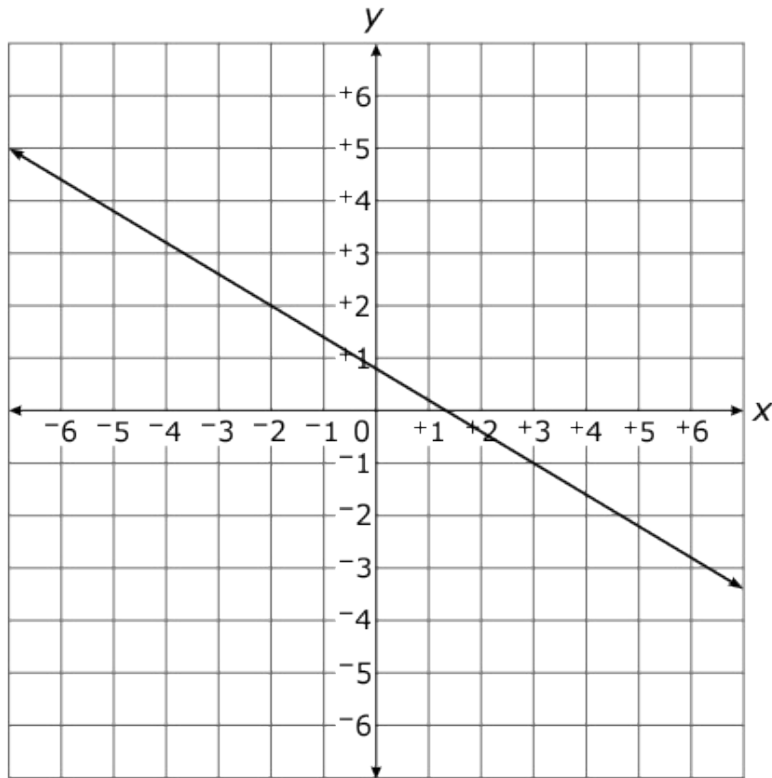


A. $3x - 5y = {}^-21$

B. $3x - 5y = 9$

C. $5x - 3y = {}^-1$

D. $5x - 3y = 19$

11. **Quadrilateral *PQRS* has vertices at *P*(–5, 1), *Q*(–2, 4), *R*(–1, 0), and *S*(–4, –3). Quadrilateral *KLMN* has vertices *K*(*a*, *b*) and *L*(*c*, *d*). Which equation must be true to prove**

$KLMN \cong PQRS?$

A. $\dfrac{4-1}{-2-(-5)} = \dfrac{d-b}{c-a}$

B. $\dfrac{4-0}{-2-(-1)} = \dfrac{d-b}{c-a}$

C. $\sqrt{(4+1)^2 + (-2-5)^2} = \sqrt{(c+a)^2 + (d+b)^2}$

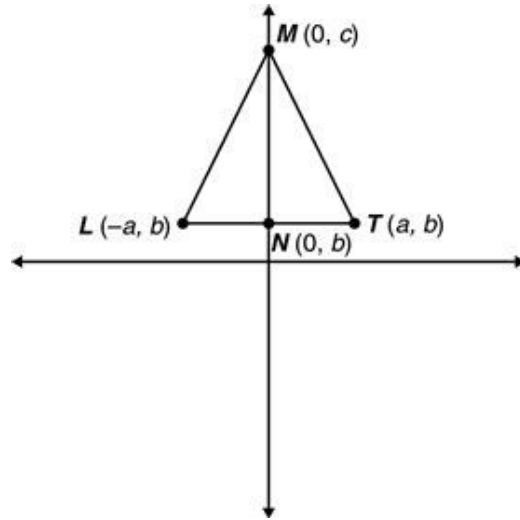D. $\sqrt{(0-4)^2 + (-1+2)^2} = \sqrt{(d-b)^2 + (c-a)^2}$

12. **The locations of the vertices of quadrilateral *LMNP* are shown on the grid below.**



$N$ (8, 6)

$M$ (2, 4)

$P$ (6, 2)

$L$ (0, 0)
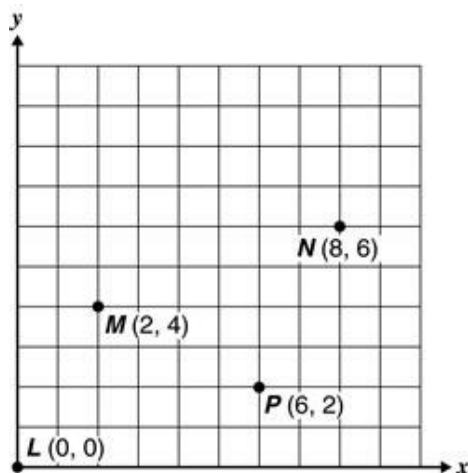
**Quadrilateral *STUV* is congruent to *LMNP*. What are the lengths of the diagonals of *STUV*?**

A. $SU = 2\sqrt{10} \text{ and } TV = 2\sqrt{5}$

B. $SU = 2\sqrt{5} \text{ and } TV = 2\sqrt{10}$

C. $SU = 2\sqrt{5} \text{ and } TV = 10$

D. $SU = 10 \text{ and } TV = 2\sqrt{5}$

13. **A student is using coordinate geometry to prove** $\triangle LMN \cong \triangle TMN,$ **as shown on the grid below.**



**Which equation should be used to prove** $\overline{LM} \cong \overline{MT}?$

A. $\sqrt{(-a-a)^2 + (b-b)^2} = \sqrt{(a+a)^2 + (b-b)^2}$

B. $\sqrt{(0+a)^2 + (c-b)^2} = \sqrt{(a-0)^2 + (b-c)^2}$

C. $\dfrac{b-c}{-a-0} = \dfrac{b-b}{a+a}$

D. $\dfrac{c-b}{0-a} = \dfrac{c-b}{0+a}$

14. **Which equation below has a linear graph that is perpendicular to the graph of** $x = -4?$

A. $y = 3$

B. $x = 4$

C. $y = -4x$

D. $y = 4x$

15. **What is the slope of a line that is parallel to the *y*-axis?**

A. 0

B. 1

C. −1

D. undefined

16. **Points _W_, _X_, _Y_, and _Z_ are marked on the coordinate grid below.**
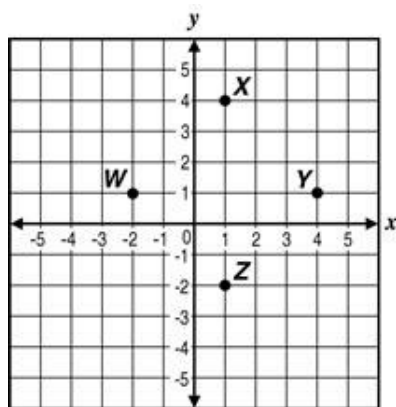


**Which statement below can be used to prove $\overline{WX} \perp \overline{XY}$?**

A. $\left(\dfrac{4-1}{1-2}\right)\left(\dfrac{1-4}{4-1}\right) = 1$

B. $\left(\dfrac{4-1}{1-2}\right)\left(\dfrac{1-4}{4-1}\right) = -1$

C. $\left(\dfrac{4-1}{1-(-2)}\right)\left(\dfrac{1-4}{4-1}\right) = 1$

D. $\left(\dfrac{4-1}{1-(-2)}\right)\left(\dfrac{1-4}{4-1}\right) = -1$

17. **What is the slope of a line that is perpendicular to the graph of** $y = \dfrac{4}{3}x + 9$?

A. $-\dfrac{4}{3}$

B. $-\dfrac{3}{4}$

C. $\dfrac{3}{4}$

D. $\dfrac{4}{3}$

18. The endpoints of a line segment are located at (4, ⁻2) and (_h_, 10). The midpoint of the line segment is located at (_f_, _g_). What are the coordinates of (_f_, _g_)?

A. $\left(\dfrac{4+h}{2}, 4\right)$

B. $\left(\dfrac{4-h}{2}, 4\right)$

C. $\left(\dfrac{4+h}{2}, 6\right)$

D. $\left(\dfrac{4-h}{2}, 6\right)$

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19. Line segment *GH* has its midpoint at *M*. If *G* is located at (⁻2, 4) and *M* is located at (6, 12), then what are the coordinates of *H*?

   A. (2, 8)

   B. (5, 11)

   C. (14, 20)

   D. (20, 14)

20. A circle has a diameter that extends from (4, ⁻6) to (⁻8, 10). What are the coordinates of the center of the circle?

   A. (⁻2, 2)

   B. (⁻3, 6)

   C. (⁻4, 4)

   D. (⁻6, 8)

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