

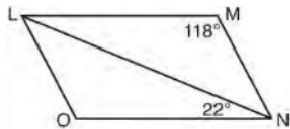
Geometry Regents Exam Questions by State Standard: Topic
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POLYGONS

G.CO.C.11: PARALLELOGRAMS

- 44 Quadrilateral $ABCD$ has diagonals \overline{AC} and \overline{BD} . Which information is *not* sufficient to prove $ABCD$ is a parallelogram?
- 1 \overline{AC} and \overline{BD} bisect each other.
 - 2 $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{AD}$
 - 3 $\overline{AB} \cong \overline{CD}$ and $\overline{AB} \parallel \overline{CD}$
 - 4 $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$

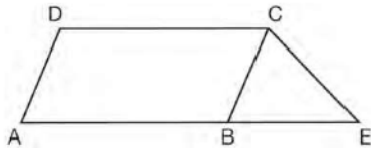
- 45 The diagram below shows parallelogram $LMNO$ with diagonal \overline{LN} , $m\angle M = 118^\circ$, and $m\angle LNO = 22^\circ$.



Explain why $m\angle NLO$ is 40 degrees.

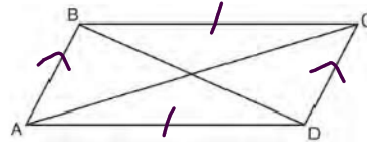
$56 + 56 + 68 = 180$

- 46 In the diagram below, $ABCD$ is a parallelogram, \overline{AB} is extended through B to E , and \overline{CE} is drawn.



- If $\overline{CE} \cong \overline{BE}$ and $m\angle D = 112^\circ$, what is $m\angle E$?
- 1 44°
 - 2 56°
 - 3 68°
 - 4 112°

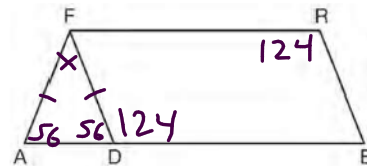
- 47 Quadrilateral $ABCD$ with diagonals \overline{AC} and \overline{BD} is shown in the diagram below.



Which information is *not* enough to prove $ABCD$ is a parallelogram?

- 1 $\overline{AB} \cong \overline{CD}$ and $\overline{AB} \parallel \overline{DC}$
- 2 $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$
- 3 $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$
- 4 $\overline{AB} \parallel \overline{DC}$ and $\overline{BC} \parallel \overline{AD}$

- 48 In the diagram of parallelogram $FRED$ shown below, \overline{ED} is extended to A , and \overline{AF} is drawn such that $\overline{AF} \cong \overline{DF}$.



- If $m\angle R = 124^\circ$, what is $m\angle AFD$?
- 1 124°
 - 2 112°
 - 3 68°
 - 4 56°

opp sides are \parallel

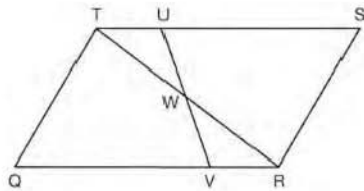
opp sides are \cong

opp \sphericalangle 's are \cong

consecutive \sphericalangle 's are supp.
diagonals bisect each
other

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- 49 In parallelogram $QRST$ shown below, diagonal \overline{TR} is drawn, U and V are points on \overline{TS} and \overline{QR} , respectively, and \overline{UV} intersects \overline{TR} at W .



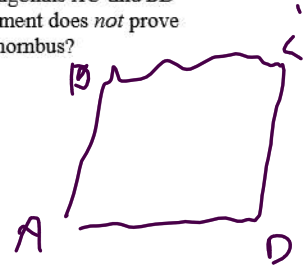
- If $m\angle S = 60^\circ$, $m\angle SRT = 83^\circ$, and $m\angle TWU = 35^\circ$, what is $m\angle WVQ$?
- 1 37°
 - 2 60°
 - 3 72°
 - 4 83°

G.CO.C.11: SPECIAL QUADRILATERALS

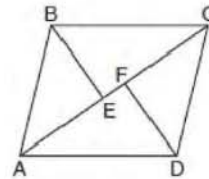
- 50 A parallelogram must be a rectangle when its
- 1 diagonals are perpendicular
 - 2 diagonals are congruent
 - 3 opposite sides are parallel
 - 4 opposite sides are congruent
- 51 A parallelogram is always a rectangle if
- 1 the diagonals are congruent
 - 2 the diagonals bisect each other
 - 3 the diagonals intersect at right angles
 - 4 the opposite angles are congruent

- 52 In parallelogram $ABCD$, diagonals \overline{AC} and \overline{BD} intersect at E . Which statement does *not* prove parallelogram $ABCD$ is a rhombus?

- 1 $\overline{AC} \cong \overline{DB}$
- 2 $\overline{AB} \cong \overline{BC}$
- 3 $\overline{AC} \perp \overline{DB}$
- 4 \overline{AC} bisects $\angle DCB$



- 53 In the diagram below, if $\triangle ABE \cong \triangle CDF$ and \overline{AEFC} is drawn, then it could be proven that quadrilateral $ABCD$ is a

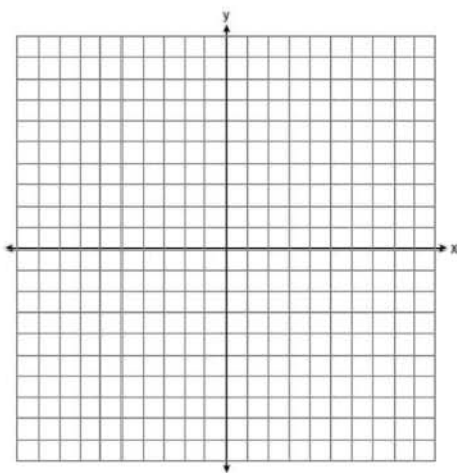


- 1 square
- 2 rhombus
- 3 rectangle
- 4 parallelogram

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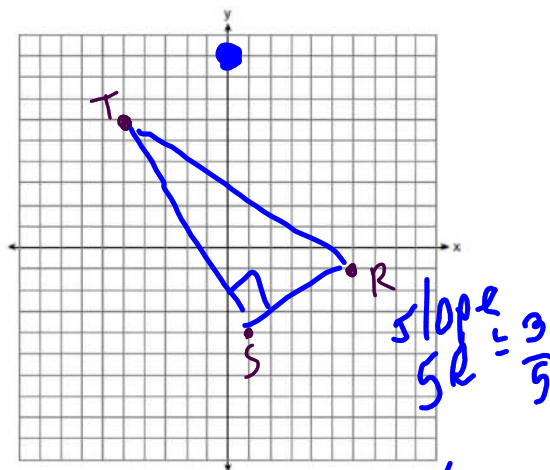
G.GPE.B.4: QUADRILATERALS IN THE COORDINATE PLANE

54 In rhombus $MATH$, the coordinates of the endpoints of the diagonal \overline{MT} are $M(0,-1)$ and $T(4,6)$. Write an equation of the line that contains diagonal \overline{AH} . [Use of the set of axes below is optional.] Using the given information, explain how you know that your line contains diagonal \overline{AH} .



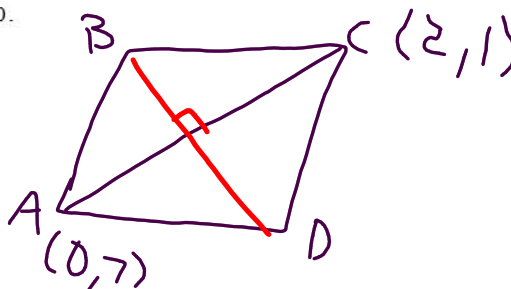
56 A quadrilateral has vertices with coordinates $(-3,1)$, $(0,3)$, $(5,2)$, and $(-1,-2)$. Which type of quadrilateral is this?
 1 rhombus
 2 rectangle
 3 square
 4 trapezoid

57 In the coordinate plane, the vertices of $\triangle RST$ are $R(6,-1)$, $S(1,-4)$, and $T(-5,6)$. Prove that $\triangle RST$ is a right triangle. State the coordinates of point P such that quadrilateral $RSTP$ is a rectangle. Prove that your quadrilateral $RSTP$ is a rectangle. [The use of the set of axes below is optional.]



55 Parallelogram $ABCD$ has coordinates $A(0,7)$ and $C(2,1)$. Which statement would prove that $ABCD$ is a rhombus?

- 1 The midpoint of \overline{AC} is $(1,4)$.
- 2 The length of \overline{BD} is $\sqrt{40}$.
- 3 The slope of \overline{BD} is $\frac{1}{3}$.
- 4 The slope of \overline{AB} is $\frac{1}{3}$.



$$\frac{\Delta y}{\Delta x} = \frac{7-1}{0-2}$$

$$= \frac{6}{-2} = -3 \rightarrow \frac{1}{3}$$

slope TS

$$\frac{\Delta y}{\Delta x} = \frac{10}{-6} = -\frac{5}{3}$$

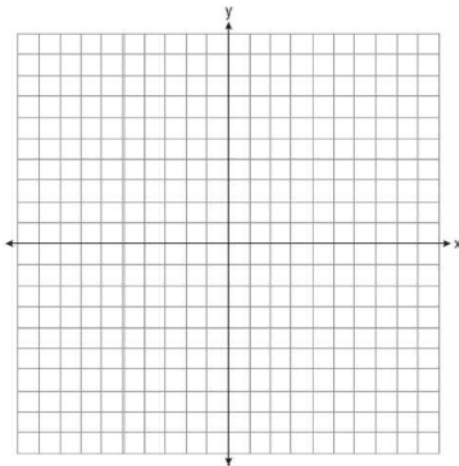
$$y = 2x + 4$$

$$y = -\frac{1}{2}x + 16$$

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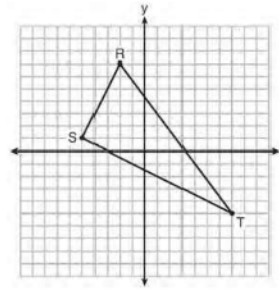
- 58 The diagonals of rhombus $TEAM$ intersect at $P(2, 1)$. If the equation of the line that contains diagonal \overline{TA} is $y = -x + 3$, what is the equation of a line that contains diagonal \overline{EM} ?
- 1 $y = x - 1$
 - 2 $y = x - 3$
 - 3 $y = -x - 1$
 - 4 $y = -x - 3$

- 59 In square $GEOM$, the coordinates of G are $(2, -2)$ and the coordinates of O are $(-4, 2)$. Determine and state the coordinates of vertices E and M . [The use of the set of axes below is optional.]



G.GPE.B.7: POLYGONS IN THE COORDINATE PLANE

- 60 Triangle RST is graphed on the set of axes below.



How many square units are in the area of $\triangle RST$?

- 1 $9\sqrt{3} + 15$
 - 2 $9\sqrt{5} + 15$
 - 3 45
 - 4 90
- 61 The coordinates of vertices A and B of $\triangle ABC$ are $A(3, 4)$ and $B(3, 12)$. If the area of $\triangle ABC$ is 24 square units, what could be the coordinates of point C ?
- 1 $(3, 6)$
 - 2 $(8, -3)$
 - 3 $(-3, 8)$
 - 4 $(6, 3)$
- 62 The endpoints of one side of a regular pentagon are $(-1, 4)$ and $(2, 3)$. What is the perimeter of the pentagon?
- 1 $\sqrt{10}$
 - 2 $5\sqrt{10}$
 - 3 $5\sqrt{2}$
 - 4 $25\sqrt{2}$