

Geometry Finals Review Notes

Unit 6 – Quadrilaterals - Review

Summary of Unit:

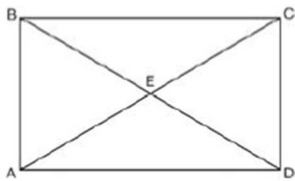
In our most recent unit we worked with different quadrilaterals and learned their different properties. Make sure you know the distance formula, midpoint formula and slope for these questions!

Below are a few terms that you need to commit to your memory for your final.

| Term | Definition |
|---------------------|------------|
| Quadrilateral | |
| Parallelogram | |
| Diagonal | |
| Rectangle | |
| Rhombus | |
| Square | |
| Trapezoid | |
| Isosceles Trapezoid | |
| Midsegment | |
| Kite | |

Below are some examples of multiple choice type problems you could see based on concepts learned in unit 6.

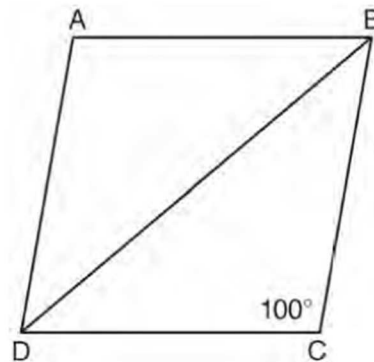
As shown in the diagram of rectangle $ABCD$ below, diagonals AC and BD intersect at E .



If $AE = x + 2$ and $BD = 4x - 16$, then the length of AC is

- 1) 6
- 2) 10
- 3) 12
- 4) 24

In the diagram below of rhombus $ABCD$, $m\angle C = 100$.



What is $m\angle DBC$?

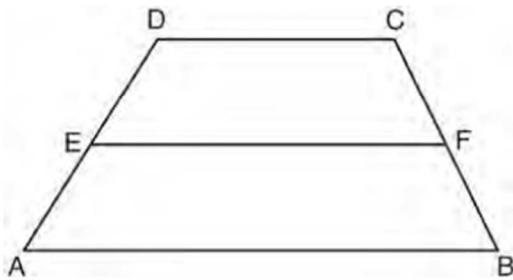
- 1) 40
- 2) 45
- 3) 50
- 4) 80

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Given three distinct quadrilaterals, a square, a rectangle, and a rhombus, which quadrilaterals must have perpendicular diagonals?

- 1) the rhombus, only
- 2) the rectangle and the square
- 3) the rhombus and the square
- 4) the rectangle, the rhombus, and the square

In the diagram below, EF is the median of trapezoid $ABCD$.



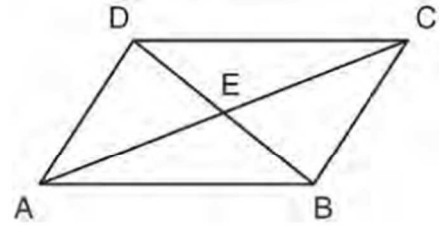
If $AB = 5x - 9$, $DC = x + 3$, and $EF = 2x + 2$, what is the value of x ?

- 1) 5
- 2) 2
- 3) 7
- 4) 8

Which reason could be used to prove that a parallelogram is a rhombus?

- 1) Diagonals are congruent.
- 2) Opposite sides are parallel.
- 3) Diagonals are perpendicular.
- 4) Opposite angles are congruent.

In the diagram below, parallelogram $ABCD$ has diagonals \overline{AC} and \overline{BD} that intersect at point E .



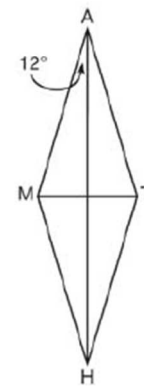
Which expression is *not* always true?

- 1) $\angle DAE \cong \angle BCE$
- 2) $\angle DEC \cong \angle BEA$
- 3) $\overline{AC} \cong \overline{DB}$
- 4) $\overline{DE} \cong \overline{EB}$

In rhombus $ABCD$, the diagonals \overline{AC} and \overline{BD} intersect at E . If $AE = 5$ and $BE = 12$, what is the length of AB ?

- 1) 7
- 2) 10
- 3) 13
- 4) 17

In the diagram below, $MATH$ is a rhombus with diagonals \overline{AH} and \overline{MT} .

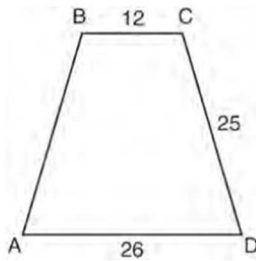


If $m\angle HAM = 12$, what is $m\angle AMT$?

- 1) 12
- 2) 78
- 3) 84
- 4) 156

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In the diagram below of isosceles trapezoid $ABCD$, $AB = CD = 25$, $AD = 26$, and $BC = 12$.



What is the length of an altitude of the trapezoid?

- 1) 7
- 2) 14
- 3) 19
- 4) 24

Given quadrilateral $ABCD$, which statement would allow the conclusion that $ABCD$ is a parallelogram?

A. $\angle A \cong \angle C$

B. $\overline{AD} \cong \overline{BC}$

C. $m\angle A + m\angle D = 180^\circ$

D. $\overline{AD} \parallel \overline{BC}$

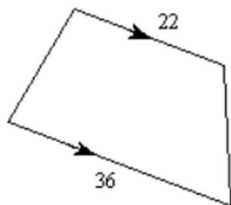


E. None of these

Which of the following statements is *always true* regarding a parallelogram?

- A. The diagonals are perpendicular to each other.
- B. The sum of the angles is 180° .
- C. Opposite sides are both parallel and congruent.
- D. There cannot be a right angle in any parallelogram.
- E. Consecutive angles are complementary.

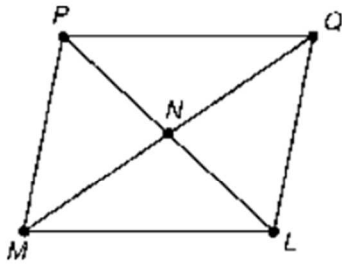
For the trapezoid shown below, the measure of the median is _____.



- a. 29
- b. 58
- c. 25
- d. 30

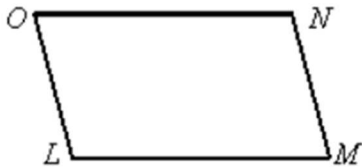
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For parallelogram $PQLM$ below, if $m\angle PML = 83^\circ$, then $m\angle PQL = \underline{\hspace{2cm}}$.



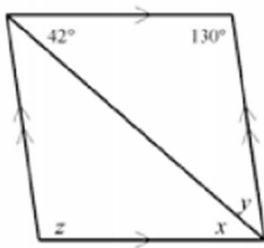
- $m\angle PQM$
- 83°
- 97°
- $m\angle QLM$

If $ON = 6x - 2$, $LM = 7x + 5$, $NM = x + 4$, and $OL = 7y + 4$, find the values of x and y given that $LMNO$ is a parallelogram.



- $x = \frac{1}{7}; y = 1$
- $x = -7; y = -1$
- $x = -3; y = -\frac{3}{7}$
- $x = \frac{1}{3}; y = \frac{7}{3}$

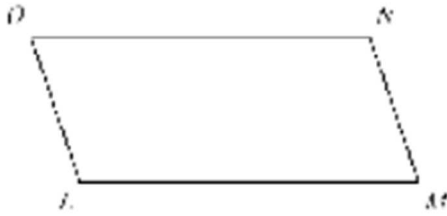
Find the value of the variables in the parallelogram.



- $x = 65^\circ, y = 21^\circ, z = 138^\circ$
- $x = 21^\circ, y = 65^\circ, z = 138^\circ$
- $x = 42^\circ, y = 8^\circ, z = 130^\circ$
- $x = 8^\circ, y = 42^\circ, z = 130^\circ$

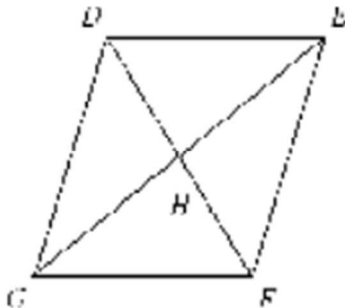
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$LMNO$ is a parallelogram. If $NM = x + 15$ and $OL = 3x + 5$ find the value of x and then find NM and OL .



- a. $x = 7, NM = 20, OL = 22$
- b. $x = 5, NM = 20, OL = 20$
- c. $x = 7, NM = 22, OL = 22$
- d. $x = 5, NM = 22, OL = 20$

In parallelogram $DEFG$, $DH = x + 3$, $HF = 3y$, $GH = 4x - 5$, and $HE = 2y + 3$. Find the values of x and y . The diagram is not to scale.



- a. $x = 6, y = 3$
- b. $x = 2, y = 3$
- c. $x = 3, y = 2$
- d. $x = 3, y = 6$

Lucinda wants to build a square sandbox, but has no way of measuring angles. Explain how she can make sure that the sandbox is square by only measuring length.

- a. Arrange four equal-length sides so the diagonals bisect each other.
- b. Arrange four equal-length sides so the diagonals are equal lengths also.
- c. Make each diagonal the same length as four equal-length sides.
- d. Not possible; Lucinda has to be able to measure a right angle.

Which description does NOT guarantee that a quadrilateral is a parallelogram?

- a. a quadrilateral with both pairs of opposite sides congruent
- b. a quadrilateral with the diagonals bisecting each other
- c. a quadrilateral with consecutive angles supplementary
- d. quadrilateral with two opposite sides parallel