

Geometry - Parallelograms and Quadrilaterals - Test Answer Key

Common Core G-CO.C.11 · maths-pdf.fr/en/

Use this answer key and scoring guide for the parallelograms test. Each solution shows the full work, and the scoring note tells how the points are split between method and final answer. Partial credit is listed so that grading stays consistent from one paper to the next.

Geometry · Common Core State Standards: **G-CO.C.11**

Question 1 - Angles of a parallelogram [2 pts]

Consecutive angles are supplementary: $(3x+6)+(2x+24)=180$, so $5x=150$ and $x=30$.

$m\angle A = m\angle C = 96^\circ$ and $m\angle B = m\angle D = 84^\circ$.

$x = 30$; 96° , 84° , 96° , 84°

Scoring: 1 point for the equation and x , 1 point for all four angles.

Question 2 - Diagonals [2 pts]

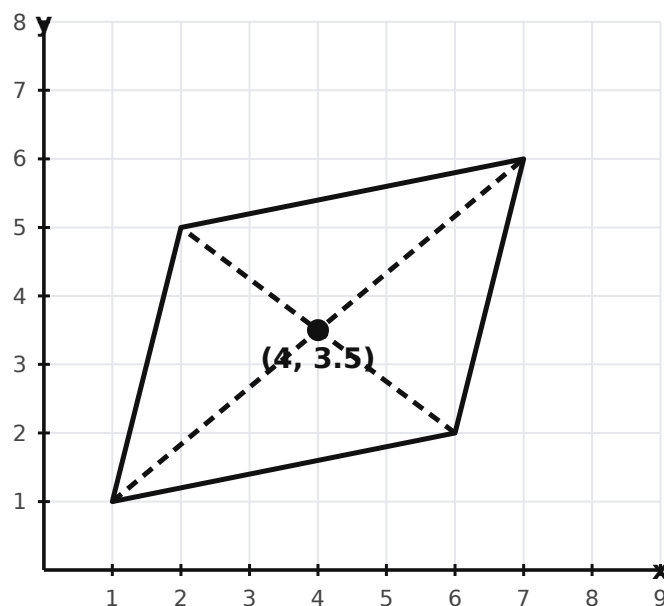
Diagonals bisect each other: $4x+3=6x-7$, so $x=5$.

$PT=23$, so $PR=46$.

$x = 5$; $PR = 46$

Scoring: 1 point for x , 1 point for PR .

Question 3 - Coordinate proof [3 pts]



Diagonals bisect each other at (4, 3.5).

- (4, 3.5) for both.
- The diagonals bisect each other, so ABCD is a parallelogram.
- $AB = \sqrt{5^2 + 1^2} = \sqrt{26}$ and $BC = \sqrt{1^2 + 4^2} = \sqrt{17}$. They differ, so it is not a rhombus.

Scoring: 1 point per part.

Question 4 - Rectangle [2 pts]

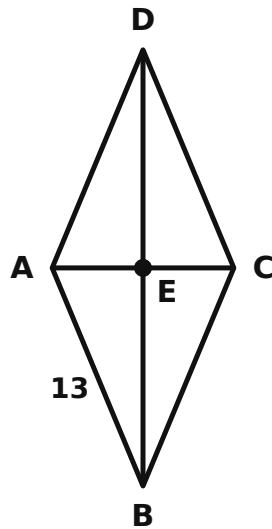
$$\sqrt{15^2 + 20^2} = \sqrt{625} = 25 \text{ feet.}$$

The diagonals of a rectangle are congruent because they are corresponding sides of congruent right triangles (SAS).

25 ft each

Scoring: 1 point for 25, 1 point for the reason.

Question 5 - Rhombus [2 pts]



Side = 13.

Half-diagonals are 5 and 12, so each side is $\sqrt{5^2+12^2}=13$.

$$4 \cdot 13 = 52$$

Side 13; perimeter 52

Scoring: 1 point for the side, 1 point for the perimeter.

Question 6 - Classify [3 pts]

- a. A rectangle (not a square).
- b. $360^\circ - 80^\circ - 110^\circ - 110^\circ = 60^\circ$
- c. $s\sqrt{2} = 14$, so $s = \frac{14}{\sqrt{2}} = 7\sqrt{2}$

(a) Rectangle; (b) 60° ; (c) $7\sqrt{2}$

Scoring: 1 point per part.

Question 7 - Prove opposite sides [2 pts]

AB is parallel to DC and AD is parallel to BC, so alternate interior angles are congruent: $\angle BAC$ with $\angle DCA$ and $\angle BCA$ with $\angle DAC$.

AC is shared, so triangles ABC and CDA are congruent by ASA, and CPCTC gives $AB = CD$.

Scoring: 1 point for the congruent triangles, 1 point for CPCTC.

Question 8 - Frame [2 pts]

The required diagonal is $\sqrt{3^2+7^2}=\sqrt{58}$, which is about 7.62 feet.

A measured 7.6 feet is within rounding of 7.62, so the frame is square.

Yes, it is square (within measuring error)

Scoring: 1 point for the diagonal, 1 point for the conclusion.

Question 9 - Perimeter [2 pts]

$$2[(3x+2)+(x+7)]=50$$

$$4x+9=25$$

$$x=4$$

$$3(4)+2=14 \text{ and } 4+7=11.$$

x = 4; sides 14 and 11

Scoring: 1 point for the equation, 1 point for x and the sides.

Total**20 points**