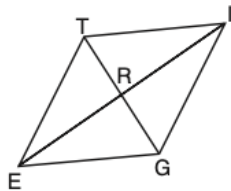


R.4 Rhombus

1. Rhombus diagonal length

In rhombus $TIGE$, diagonals \overline{TG} and \overline{IE} intersect at R . The perimeter of $TIGE$ is 68, and $TG = 16$.

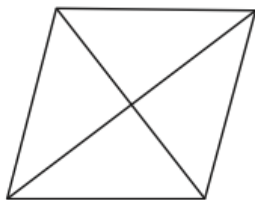


What is the length of diagonal \overline{IE} ?

- | | |
|--------|--------|
| (1) 15 | (3) 34 |
| (2) 30 | (4) 52 |

2. Rhombus transformations “onto”

The figure below shows a rhombus with noncongruent diagonals.



Which transformation would *not* carry this rhombus onto itself?

- (1) a reflection over the shorter diagonal
- (2) a reflection over the longer diagonal
- (3) a clockwise rotation of 90° about the intersection of the diagonals
- (4) a counterclockwise rotation of 180° about the intersection of the diagonals

3. Rhombus side length

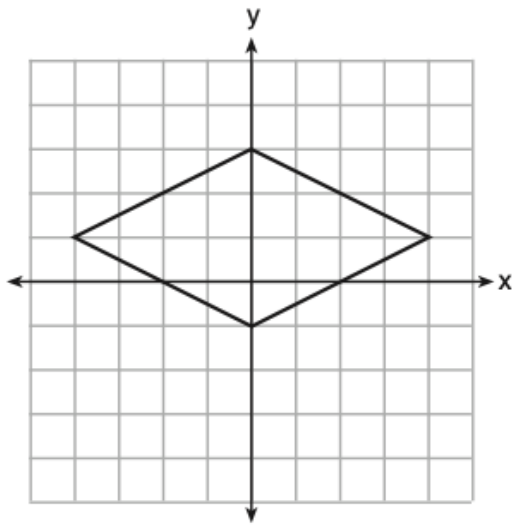
Rhombus $STAR$ has vertices $S(-1,2)$, $T(2,3)$, $A(3,0)$, and $R(0,-1)$.

What is the perimeter of rhombus $STAR$?

- | | |
|------------------|------------------|
| (1) $\sqrt{34}$ | (3) $\sqrt{10}$ |
| (2) $4\sqrt{34}$ | (4) $4\sqrt{10}$ |

4. Rhombus reflection

A rhombus is graphed on the set of axes below.

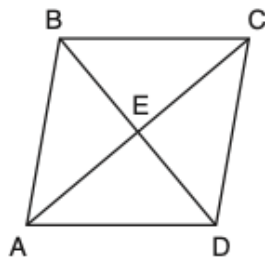


Which transformation would carry the rhombus onto itself?

- (1) 180° rotation counterclockwise about the origin
- (2) reflection over the line $y = \frac{1}{2}x + 1$
- (3) reflection over the line $y = 0$
- (4) reflection over the line $x = 0$

5. Rhombus properties (perpendicular diagonals)

The diagram below shows parallelogram $ABCD$ with diagonals \overline{AC} and \overline{BD} intersecting at E .

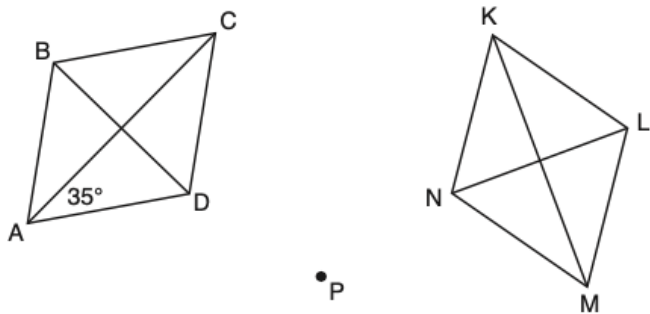


What additional information is sufficient to prove that parallelogram $ABCD$ is also a rhombus?

- (1) \overline{BD} bisects \overline{AC} .
- (2) \overline{AB} is parallel to \overline{CD} .
- (3) \overline{AC} is congruent to \overline{BD} .
- (4) \overline{AC} is perpendicular to \overline{BD} .

6. Rhombus angle calculation

Rhombus $ABCD$ can be mapped onto rhombus $KLMN$ by a rotation about point P , as shown below.

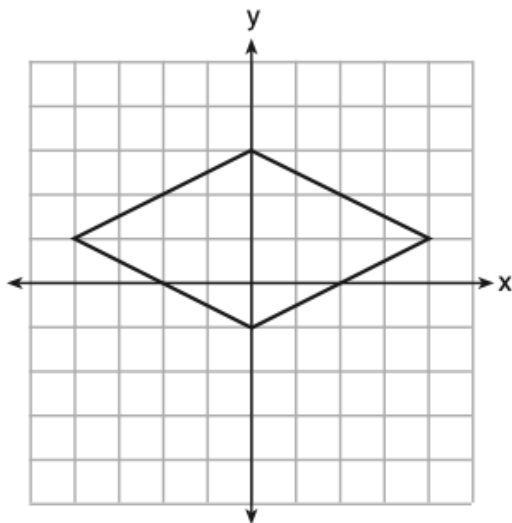


What is the measure of $\angle KNM$ if the measure of $\angle CAD = 35^\circ$?

- (1) 35° (3) 70°
 (2) 55° (4) 110°

7. Inscribe angle measures situation

A rhombus is graphed on the set of axes below.

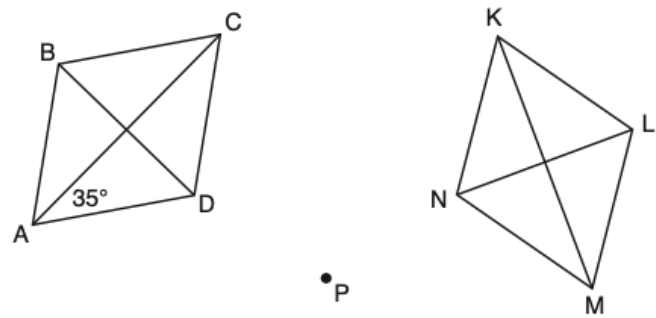


Which transformation would carry the rhombus onto itself?

- (1) 180° rotation counterclockwise about the origin
 (2) reflection over the line $y = \frac{1}{2}x + 1$
 (3) reflection over the line $y = 0$
 (4) reflection over the line $x = 0$

8. Semicircle-inscribed triangle angle measure situation

Rhombus $ABCD$ can be mapped onto rhombus $KLMN$ by a rotation about point P , as shown below.



What is the measure of $\angle KNM$ if the measure of $\angle CAD = 35^\circ$?

- (1) 35°
- (2) 55°
- (3) 70°
- (4) 110°

9. Secant / tangent length situation

Which set of statements would describe a parallelogram that can always be classified as a rhombus?

- I. Diagonals are perpendicular bisectors of each other.
- II. Diagonals bisect the angles from which they are drawn.
- III. Diagonals form four congruent isosceles right triangles.

- (1) I and II
- (2) I and III
- (3) II and III
- (4) I, II, and III

10. Secant angle situation

If $ABCD$ is a parallelogram, which statement would prove that $ABCD$ is a rhombus?

- (1) $\angle ABC \cong \angle CDA$
- (2) $\overline{AC} \cong \overline{BD}$
- (3) $\overline{AC} \perp \overline{BD}$
- (4) $\overline{AB} \perp \overline{CD}$