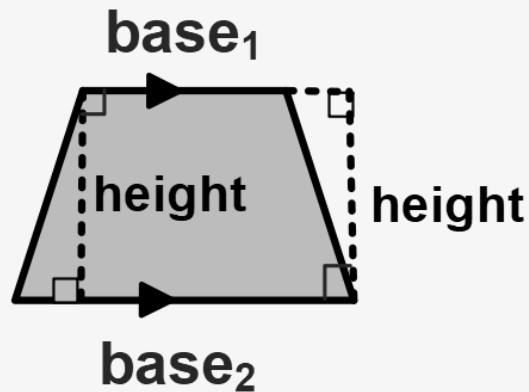


Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

Objectives: Find areas of trapezoids, rhombi, and Kites

Remember: A trapezoid has only **ONE** pair of sides that are parallel. These are the bases. The height is the perpendicular distance between the bases.



Area of a trapezoid is equal to one half the product of the height and the sum of its two bases.

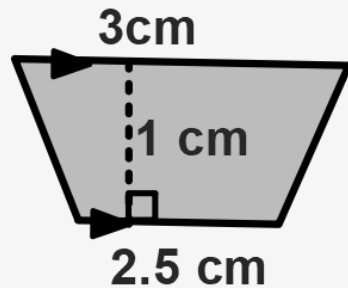
$$** A = \frac{1}{2} h (b_1 + b_2) **$$

$$A = \frac{h (b_1 + b_2)}{2}$$

Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

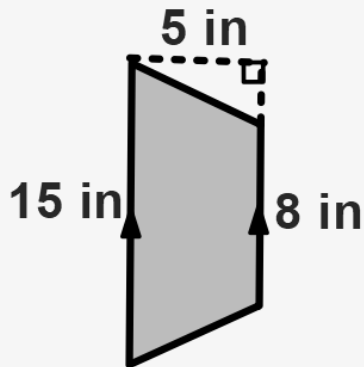
Objectives: Find areas of trapezoids, rhombi, and Kites

Example 1 Find the area of the trapezoid.



$$A = \frac{1(3+2.5)}{2} = \frac{5.5}{2} = 2.75 \text{ cm}^2$$

Example 2 Find the area of the trapezoid.



$$A = \frac{5(15+8)}{2} = 57.5 \text{ in}^2$$

Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

Objectives: Find areas of trapezoids, rhombi, and Kites

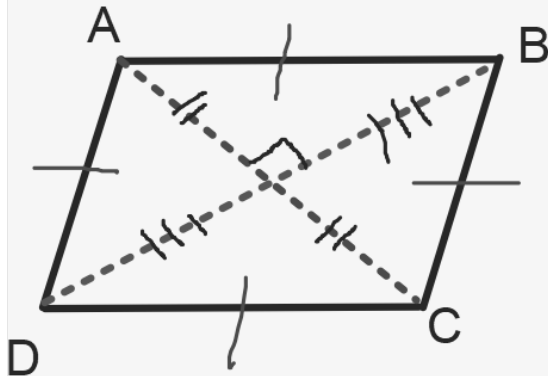
RECALL: A RHOMBUS is a parallelogram with ALL 4 sides congruent.
A KITE is a quadrilateral with exactly two pairs of consecutive congruent sides.

Area of a Rhombus

If a rhombus has an area of A square units, and diagonals of d_1 and d_2 units, then

$$A = \frac{1}{2} d_1 d_2 \quad A = \frac{d_1 d_2}{2}$$

Example: $A = \frac{1}{2} (AC)(BD)$

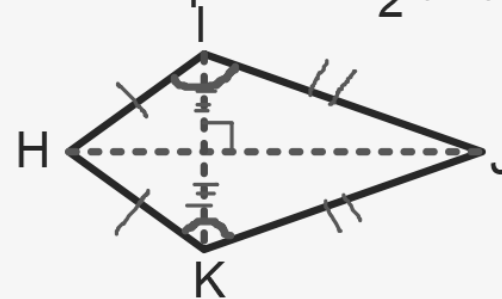


Area of a Kite

If a kite has an area of A square units, and diagonals of d_1 and d_2 units, then

$$A = \frac{1}{2} d_1 d_2$$

Example: $A = \frac{1}{2} (IK)(HJ)$



If a diagonal is missing, you may need to use pythagorean theorem to find half of it. Then double to find the diagonal.

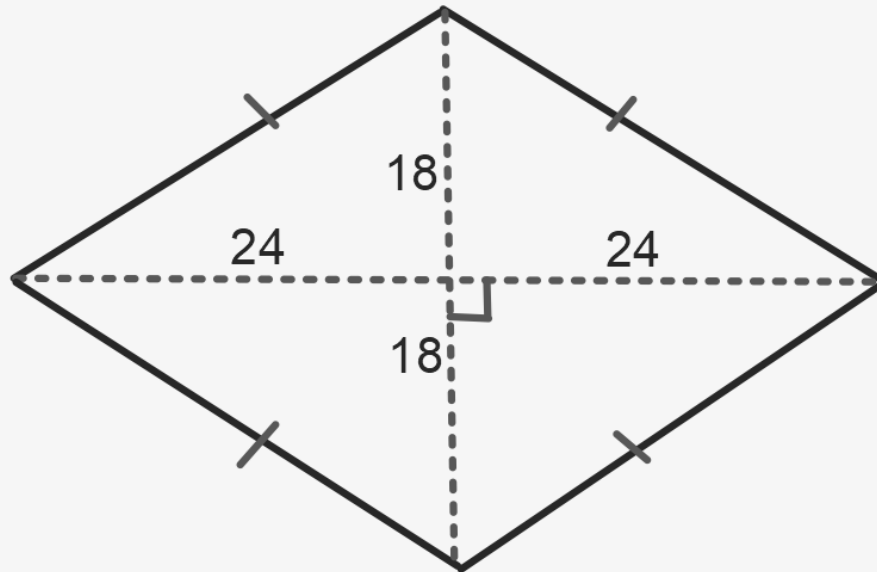
Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

Objectives: Find areas of trapezoids, rhombi, and Kites

Example 3:

Find the area of the rhombus.

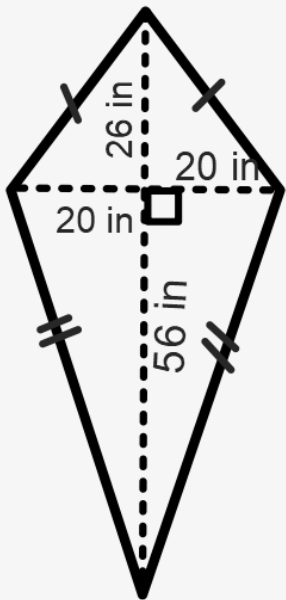
$$A = \frac{(48)(36)}{2} = \boxed{864}$$



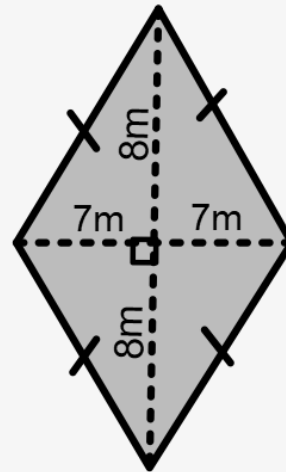
Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

Objectives: Find areas of trapezoids, rhombi, and kites

Example 4 Find the area of each rhombus or kite.



$$A = \frac{40(82)}{2} = \boxed{1640 \text{ in}^2}$$



$$A = \frac{bh}{2}$$
$$A = \frac{(14)(16)}{2}$$

$$A = 112 \text{ m}^2$$

Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

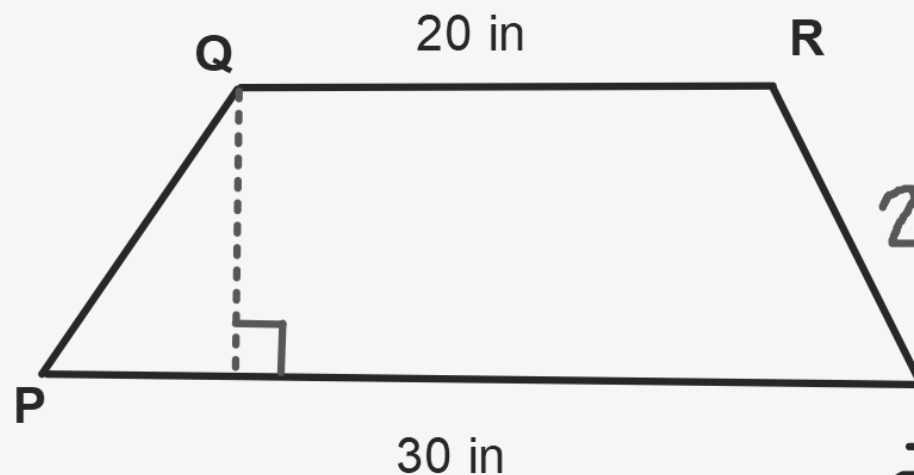
Objectives: Find areas of trapezoids, rhombi, and Kites

Example 5:

$$A = 250$$

$$h = ?$$

Trapezoid PQRS has an area of 250 square inches. Find the height of PQRS.



$$A = \frac{h(b_1 + b_2)}{2}$$
$$250 = \frac{h(20 + 30)}{2}$$

$$2 \cdot 250 = \frac{50h}{2}$$

$$\frac{500}{50} = \frac{50h}{50}$$

$$\boxed{10 \text{ in} = h}$$

Unit 8 Lesson 2 Areas of Trapezoids, Rhombi, and Kites [section 11-2]

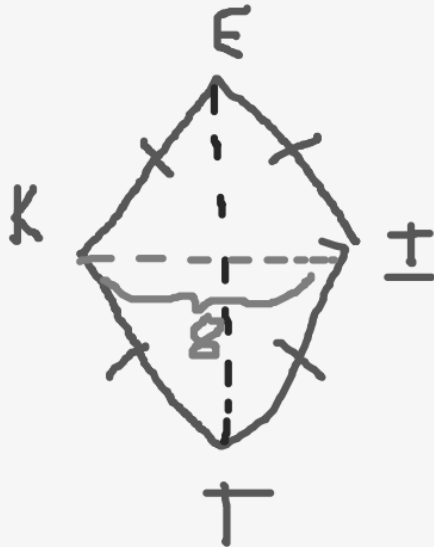
Objectives: Find areas of trapezoids, rhombi, and Kites

Example 6:

$$A = 64$$

Rhombus KEIT has an area of 64 square inches.

Find TE if KI = 8 inches.



$$A = \frac{1}{2} d_1 d_2 \rightarrow A = \frac{d_1 d_2}{2}$$
$$2 \cdot 64 = \frac{8x}{2} \cdot x$$

$$\frac{128}{8} = \frac{8x}{8}$$

$$\boxed{16 \text{ in} = x}$$