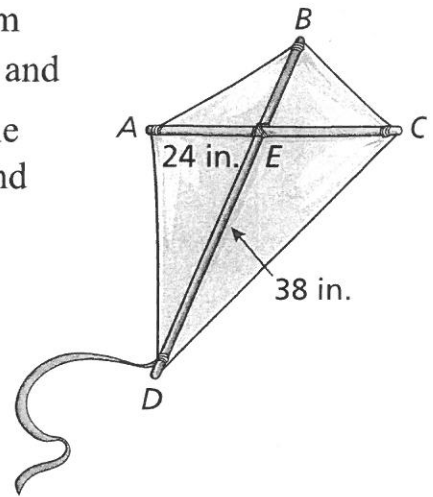


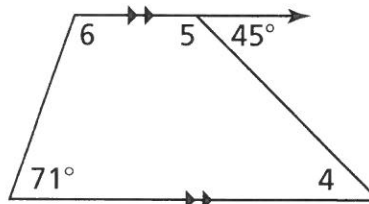
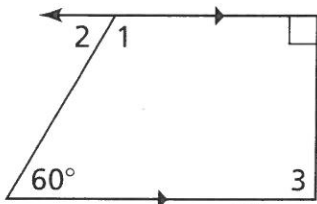
7.5 Start Thinking

A kite is to be constructed according to the diagram with $1\frac{1}{4}$ yards of nylon fabric, one 38-inch dowel, and one 24-inch dowel. Describe the construction of the kite in geometric terms. Reference the segments and angles shown in the diagram.



7.5 Warm Up

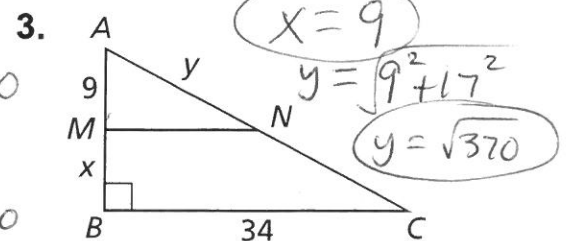
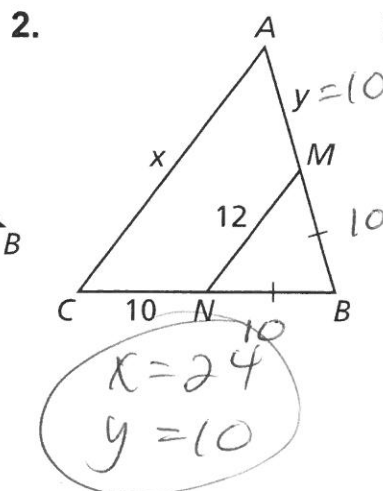
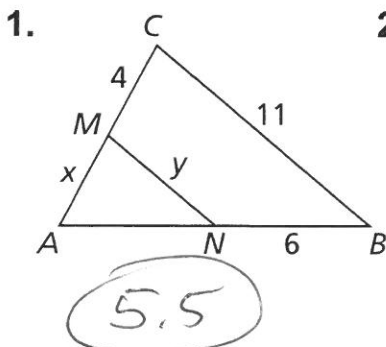
Use the diagrams to determine the measure of the angle.



1. $m\angle 1$ $180^\circ - 60^\circ = 120^\circ$
2. $m\angle 2$ 60°
3. $m\angle 3$ $180^\circ - 90^\circ = 90^\circ$
4. $m\angle 4$ 45°
5. $m\angle 5$ $180^\circ - 45^\circ = 135^\circ$
6. $m\angle 6$ $180^\circ - 71^\circ = 109^\circ$

7.5 Cumulative Review Warm Up

\overline{MN} is a midsegment of $\triangle ABC$. Find the values of x and y .



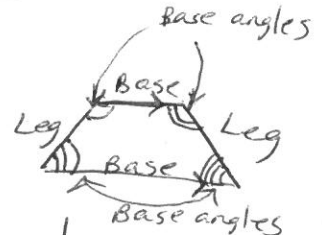
7.5**Notetaking with Vocabulary**

For use after Lesson 7.5

In your own words, write the meaning of each vocabulary term.

trapezoid Quadrilateral with exactly one pair of \parallel sidesbases \parallel sides in a trapezoid

base angles Consecutive angles that share a base



legs nonparallel sides in a trapezoid

isosceles trapezoid

legs are \cong

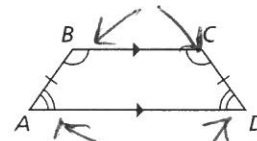
midsegment of a trapezoid

 \parallel to each base; endpoints are the midpoints of the legs;

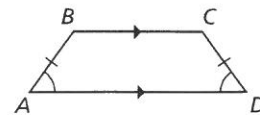
kite

2 pairs of consecutive \cong sides;
Opp. sides \neq **Theorems****Theorem 7.14 Isosceles Trapezoid Base Angles Theorem**

If a trapezoid is isosceles, then each pair of base angles is congruent.

If trapezoid $ABCD$ is isosceles, then $\angle A \cong \angle D$ and $\angle B \cong \angle C$.only true for
isos. trapezoids**Theorem 7.15 Isosceles Trapezoid Base Angles Converse**

If a trapezoid has a pair of congruent base angles, then it is an isosceles trapezoid.

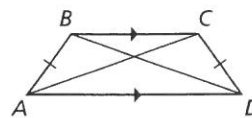
If $\angle A \cong \angle D$ (or if $\angle B \cong \angle C$), then trapezoid $ABCD$ is isosceles.

7.5 Notetaking with Vocabulary (continued)

Theorem 7.16 Isosceles Trapezoid Diagonals Theorem

A trapezoid is isosceles if and only if its diagonals are congruent.

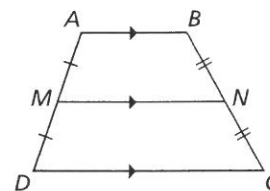
Trapezoid $ABCD$ is isosceles if and only if $\overline{AC} \cong \overline{BD}$.



Theorem 7.17 Trapezoid Midsegment Theorem

The midsegment of a trapezoid is parallel to each base, and its length is one-half the sum of the lengths of the bases.

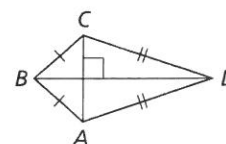
If \overline{MN} is the midsegment of trapezoid $ABCD$, then $\overline{MN} \parallel \overline{AB}$, $\overline{MN} \parallel \overline{DC}$, and $MN = \frac{1}{2}(AB + CD)$.



Theorem 7.18 Kite Diagonals Theorem

If a quadrilateral is a kite, then its diagonals are perpendicular.

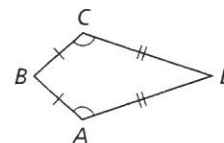
If quadrilateral $ABCD$ is a kite, then $\overline{AC} \perp \overline{BD}$.



Theorem 7.19 Kite Opposite Angles Theorem

If a quadrilateral is a kite, then exactly one pair of opposite angles are congruent.

If quadrilateral $ABCD$ is a kite and $\overline{BC} \cong \overline{BA}$, then $\angle A \cong \angle C$ and $\angle B \not\cong \angle D$.



Notes:

7.5 Notetaking with Vocabulary (continued)

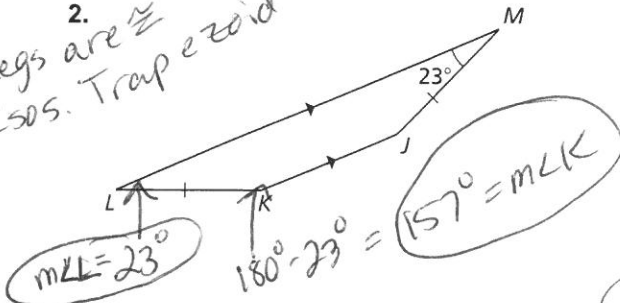
Extra Practice

1. Show that the quadrilateral with vertices at $Q(0, 3), R(0, 6), S(-6, 0),$ and $T(-3, 0)$ is a trapezoid. Decide whether the trapezoid is isosceles. Then find the length of the midsegment of the trapezoid.

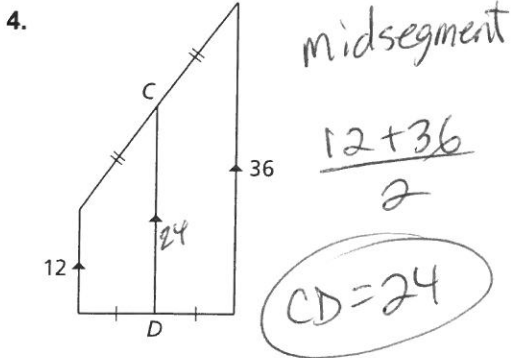
Slopes: $RS: +1, ST: 0, TQ: 1$
 $QR: \text{und.}$
 $QR = 3, ST = 3$

In Exercises 2 and 3, find $m\angle K$ and $m\angle L$.

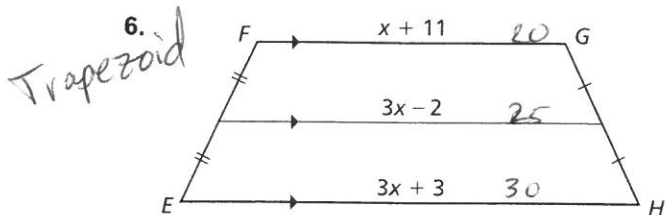
2. Legs are \cong
 Isos. Trapezoid



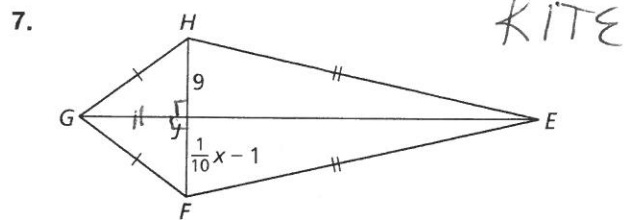
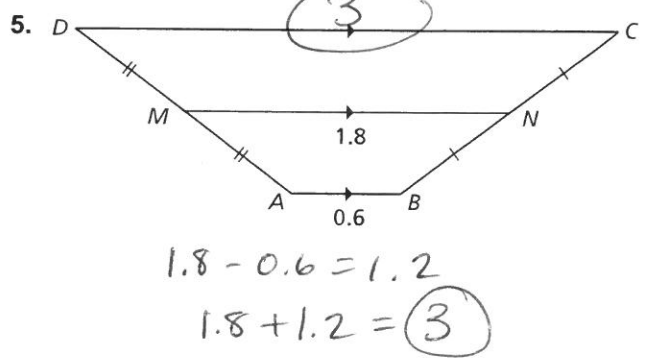
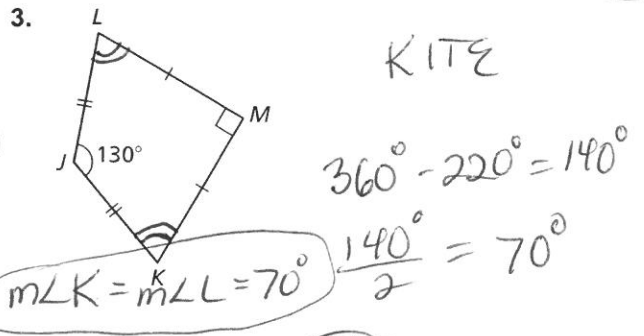
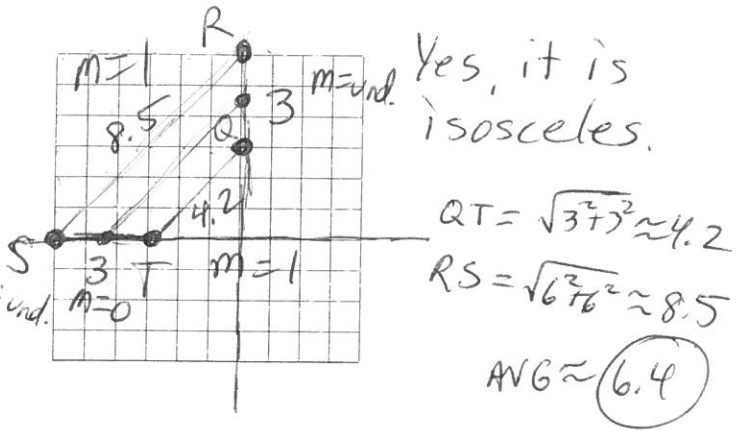
In Exercises 4 and 5, find CD .



In Exercises 6 and 7, find the value of x .



2. $\frac{(x+11 + 3x+3)}{2} = (3x-2) \cdot 2$
 $4x+14 = 6x-4$
 $18 = 2x$
 $x = 9$



$\frac{1}{10}x - 1 = 9$
 $\frac{1}{10}x = 10$
 $x = 100$