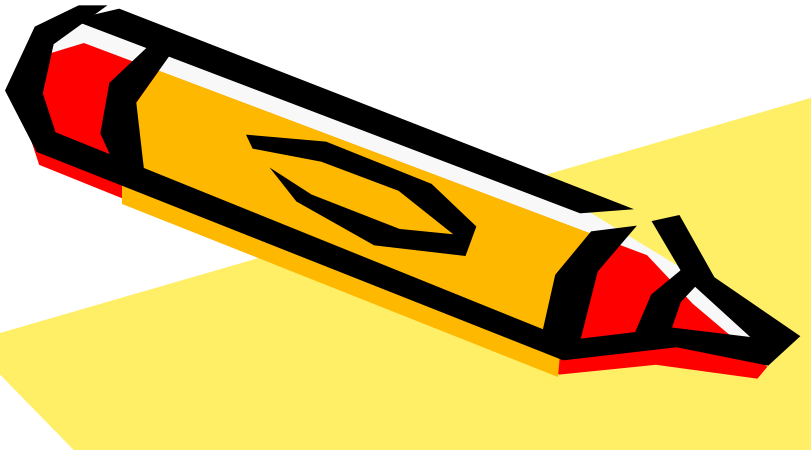
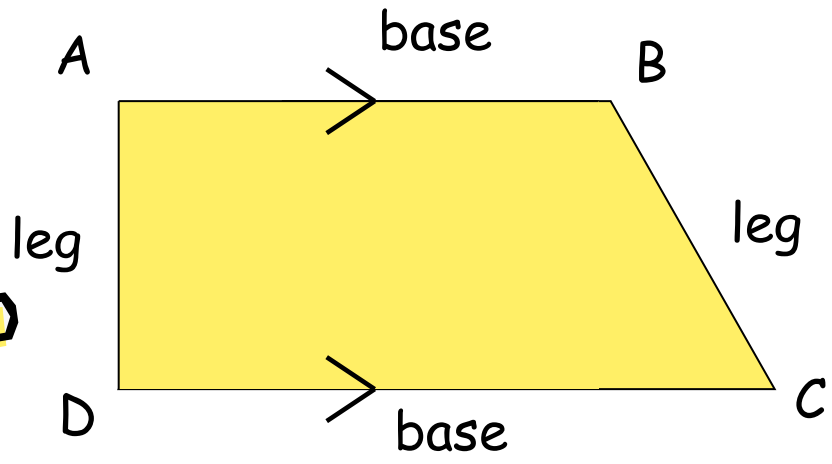


Geometry

Trapezoids

Trapezoids

- A trapezoid is a quadrilateral with exactly one pair of parallel sides.
- The parallel sides are called bases. Bases of a trapezoid will never be congruent
- The other two sides are called legs.
- A trapezoid has two pairs of base angles.
- The angles along one leg and between the bases are consecutive interior angles, and are supplementary.

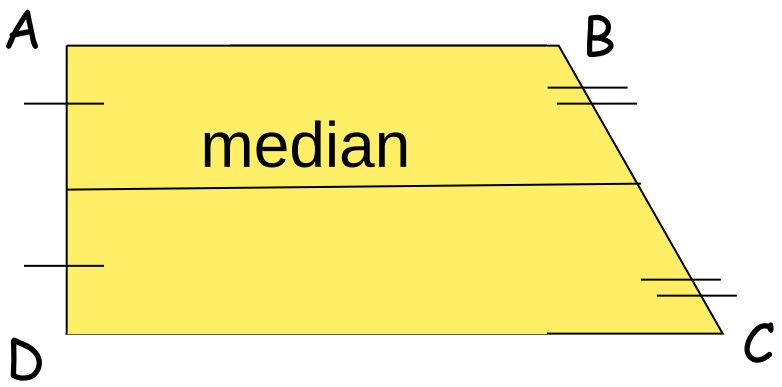


One pair of base Angles: ∠A & ∠B.
Another pair:
∠D and ∠C.

Trapezoids

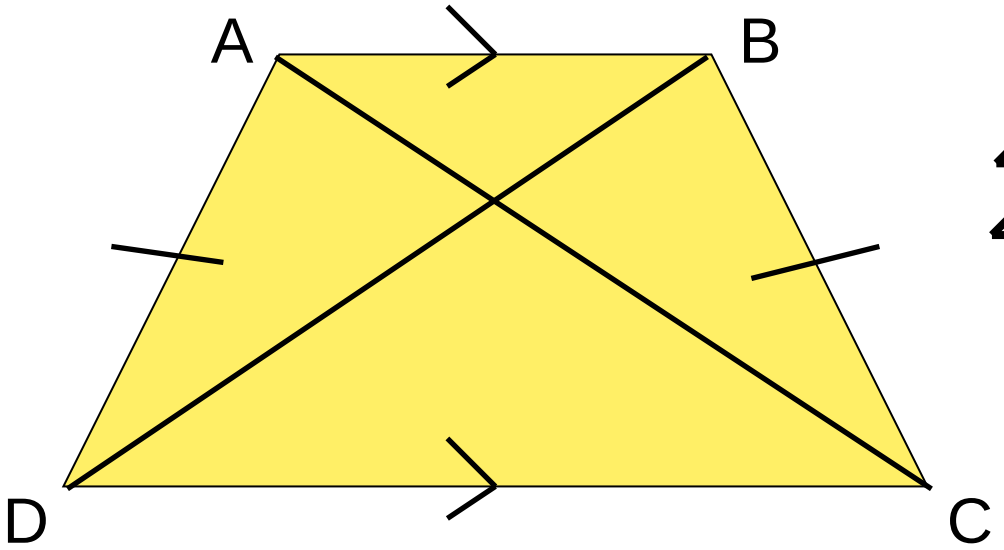
- The median (midsegment) of a trapezoid is a segment that connects the midpoints of the legs
- The median (midsegment) is parallel to the bases
- The median (midsegment) = $\frac{1}{2}$ the sum of the bases

$$median = \frac{1}{2}\ (b_1 + b_2)$$



Isosceles Trapezoids

- Congruent legs
- Each pair of base angles is congruent
- Diagonals are congruent



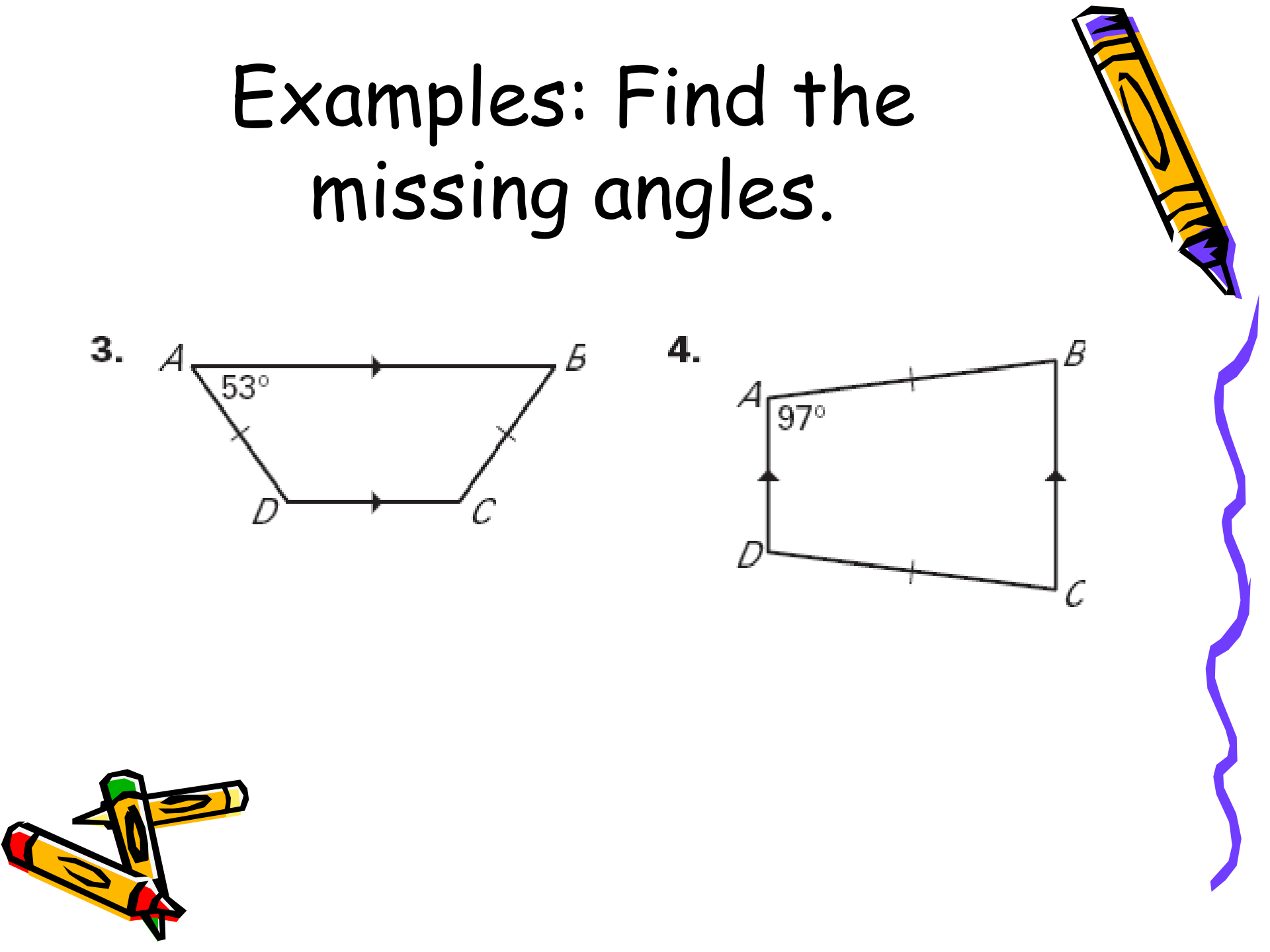
$\overline{AD} \cong \overline{BC}$

$\angle ADC \cong \angle BCD$

$\angle DAB \cong \angle CBA$

$\overline{AC} \cong \overline{BD}$

Examples: Find the missing angles.



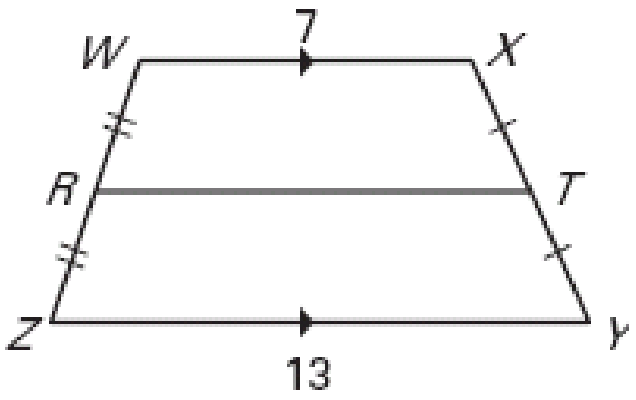
3.

4.

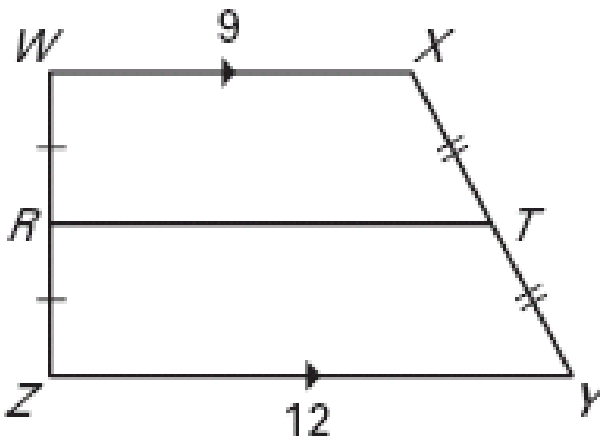
Examples

Find the length of the midsegment $\overline{RT}$.

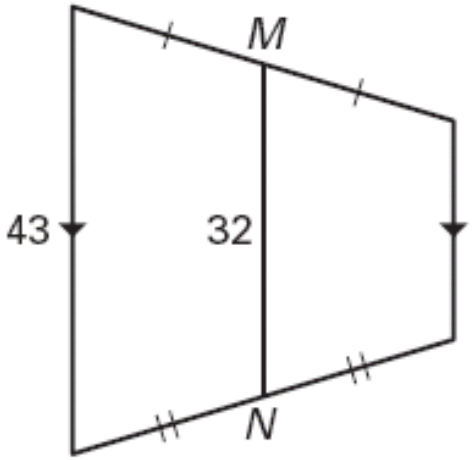
6.



7.



13.

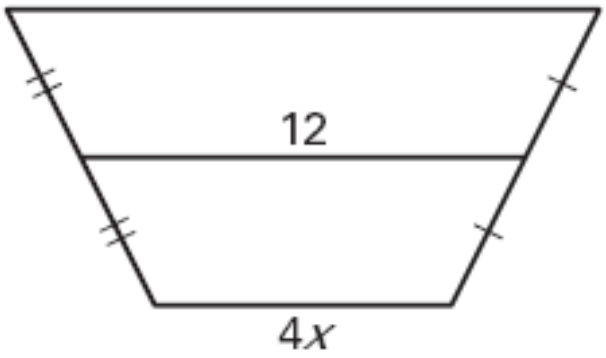


Find the length of the unknown base.

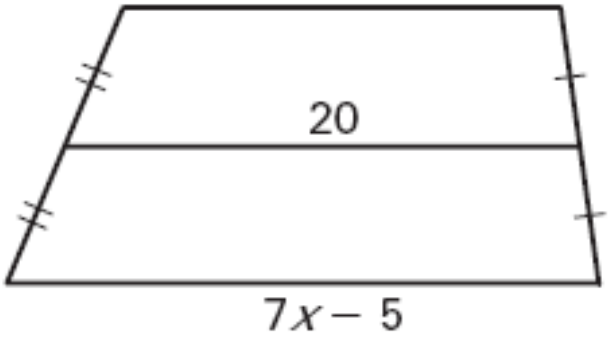
Examples

Find the value of *x*.

19.



20.



Examples

PIGS is an isosceles trapezoid with legs $\overline{PI}$ and $\overline{GS}$. The diagonals intersect at A. PA = 2x, GA = 5x+2, and IS = 37. find x.

PIGS also has a median, $\overline{ET}$, with E as the midpoint of $\overline{PI}$. If PE = 4, find GS.