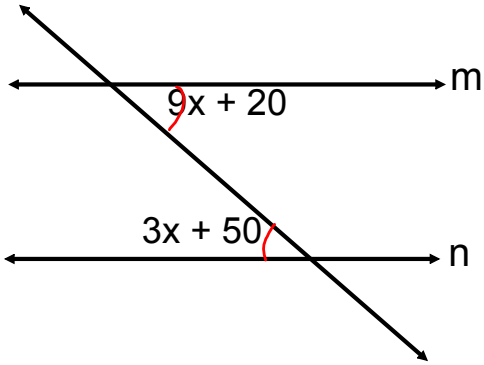
DO NOW

Line m is parallel to line n. Find the value of x



$9x + 20 = 3x + 50$

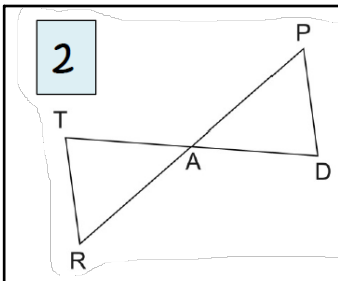
$6x + 20 = 50$

$6x = 30$

$x = 5$

Dec 10-10:13 AM

2



Given: $\overline{RAP}$; $\overline{TAD}$

$\overline{RP}$ bis $\overline{TD}$

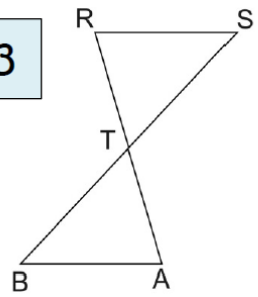
$\overline{TD}$ bis $\overline{RP}$

Prove: $\overline{TR} \parallel \overline{PD}$

Statements	Reasons
1. $\overline{RAP}$; $\overline{RP}$ bis $\overline{TD}$ $\overline{TD}$ bis $\overline{RP}$	1. Given
2. $\overline{TA} \cong \overline{DA}$; $\overline{RA} \cong \overline{PA}$	2. Bisector of a segment forms 2 $\cong$ segments.
3. $\angle TAR \cong \angle DAP$	3. Vertical $\angle$s are $\cong$.
4. $\Delta TAR \cong \Delta DAP$	4. SAS: If 2 sides and the included $\angle$ of 1 Δ are $\cong$ to the corres. parts of a 2nd Δ, the Δs are $\cong$.
5. $\angle R \cong \angle P$ (or $\angle T \cong \angle D$)	5. CPCTC: Corres. parts of $\cong$ Δs are $\cong$.
6. $\overline{TR} \parallel \overline{PD}$	6. If 2 lines are cut by a trans. and alt. int. $\angle$ are $\cong$, the lines are parallel.

Nov 20-8:28 AM

3



Given: $\overline{RS} \parallel \overline{BA}$; $\overline{RS} \cong \overline{BA}$
$\overline{RTA}$; $\overline{STB}$

Prove: $\overline{RA}$ and $\overline{SB}$ bisect each other

Statements	Reasons
1. $\overline{RS} \parallel \overline{BA}$; $\overline{RS} \cong \overline{BA}$ $\overline{RTA}$; $\overline{STB}$	1. Given
2. $\measuredangle R \cong \measuredangle A$ $\measuredangle S \cong \measuredangle B$	2. If 2 $\parallel$ lines are cut by a trans., the alt. int. $\measuredangle$s are $\cong$.
3. $\Delta RST \cong \Delta ABT$	3. ASA: If 2$\measuredangle$s and incl. side of 1 Δ are $\cong$ to the corres. parts of another Δ, the Δs are $\cong$.
4. $\overline{BT} \cong \overline{ST}$; $\overline{RT} \cong \overline{AT}$	4. CPCTC: Corres. parts of $\cong$ Δs are $\cong$.
5. $\overline{RA}$ bis $\overline{SB}$; $\overline{SB}$ bis $\overline{RA}$	5. A segment bisector divides a a segment into 2 $\cong$ segments.

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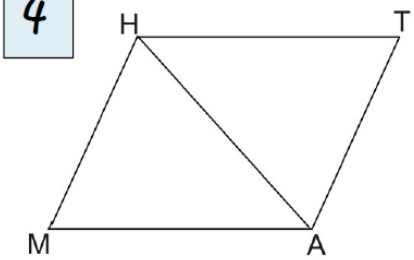
4



Given: $\overline{MH} \cong \overline{TA}$
$\measuredangle M \cong \measuredangle T$
$\measuredangle MHA \cong \measuredangle TAH$

Prove: $\overline{HT} \parallel \overline{MA}$

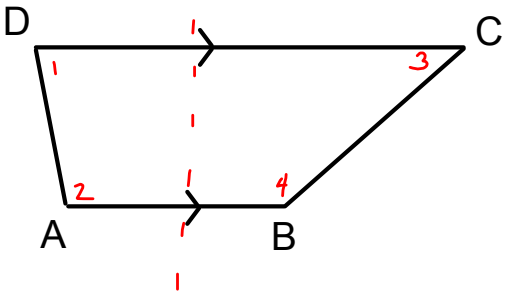
Statements	Reasons
1. $\overline{MH} \cong \overline{TA}$ $\measuredangle M \cong \measuredangle T$ $\measuredangle MHA \cong \measuredangle TAH$	1. Given
2. $\Delta MHA \cong \Delta TAH$	2. ASA: If 2$\measuredangle s$ and the included side of 1 Δ are $\cong$ to corres. parts of another Δ, the Δs are $\cong$.
3. $\measuredangle MAH \cong \measuredangle THA$	3. CPCTC: Corres. parts of $\cong \Delta$s are $\cong$.
4. $\overline{HT} \parallel \overline{MA}$	4. If 2 lines are cut by a trans. and the alt. int. $\measuredangle$s are $\cong$, the lines are parallel.

Nov 20-8:29 AM

Trapezoid

A quadrilateral in which AT LEAST one pair of sides are parallel

AB // CD



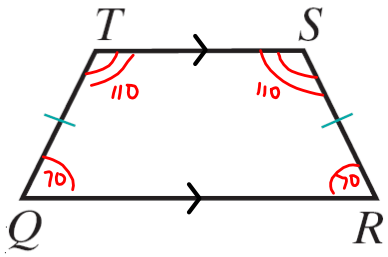
Consecutive angles are supplementary

(between the parallel lines)

Dec 21-10:25 AM

Isosceles Trapezoid

A trapezoid in which the *nonparallel* sides are CONGRUENT



QR // TS

QT ≅ SR

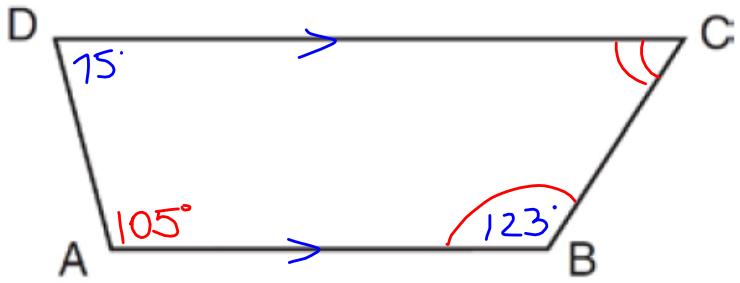
The base angles are also congruent:

∠Q ≅ ∠R and ∠T ≅ ∠S

Dec 21-10:26 AM

In the diagram below, $\overline{AB}$ and $\overline{CD}$ are bases of trapezoid $ABCD$.

↓ parallel



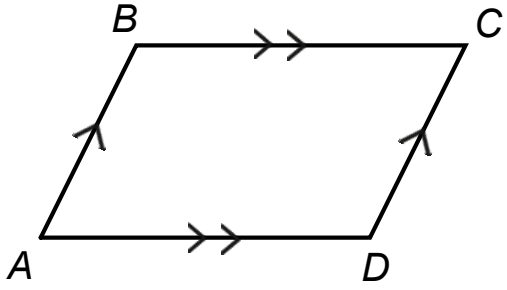
(Not drawn to scale)

If $m\angle B = 123$ and $m\angle D = 75$, what is $m\angle C$?

$m\angle C = 57°$

Nov 20-1:19 PM

A parallelogram is a quadrilateral that has two pairs of opposite sides parallel

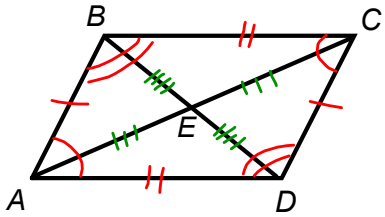


$AB \parallel CD$
$BC \parallel AD$

A parallelogram is a TRAPEZOID

Dec 10-10:15 AM

Properties of Parallelograms



- Opposite SIDES are congruent

$\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{AD}$

- Opposite ANGLES are congruent

$\angle A \cong \angle C$ and $\angle B \cong \angle D$

Trapezoids

- Two consecutive angles are supplementary

Ex: $\angle A + \angle B = 180$

- The diagonals bisect each other

$\overline{AE} \cong \overline{EC}$ and $\overline{BE} \cong \overline{DE}$

Dec 10-10:20 AM

The diagonals of parallelogram *ABCD* intersect at *E*. If *AE* = 5x - 3 and *EC* = 15 - x, find *AC*.

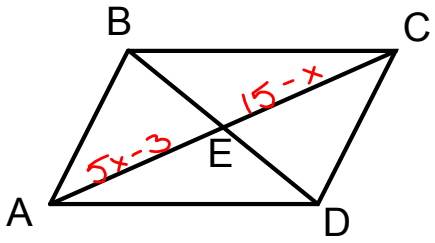
$AE = 5(3) - 3$

$AE = 12$

$EC = 15 - 3$

$EC = 12$

$AC = 24$



$\overline{AE} \cong \overline{CE}$

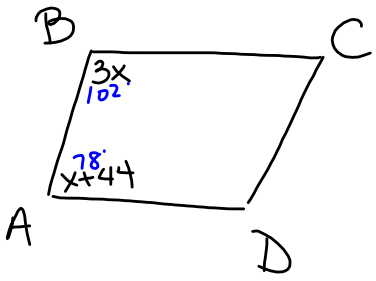
$5x - 3 = 15 - x$

$6x = 18$

$x = 3$

Dec 10-10:57 AM

In parallelogram *ABCD*, m∠*A* = x + 44 and m∠*B* = 3x. Find the measure of each angle of the parallelogram.



$3x + x + 44 = 180$

$4x + 44 = 180$

$4x = 136$

$x = 34$

$m\angle A = 78°$

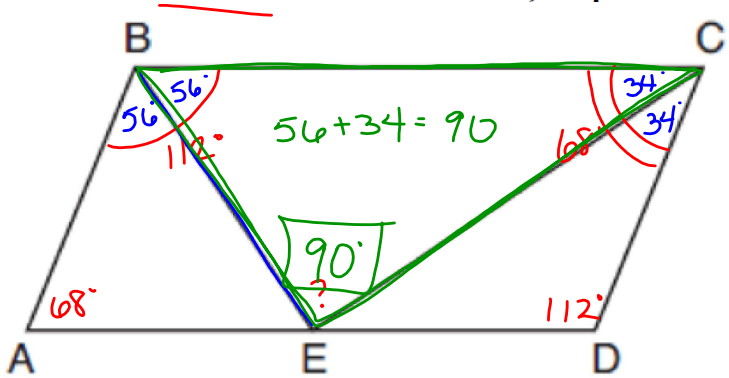
$m\angle B = 102°$

$m\angle C = 78°$

$m\angle D = 102°$

Dec 10-10:42 AM

In parallelogram *ABCD* shown below, the bisectors of ∠*ABC* and ∠*DCB* meet at *E*, a point on $\overline{AD}$.



If m∠*A* = 68°, determine and state m∠*BEC*.

Nov 20-1:16 PM