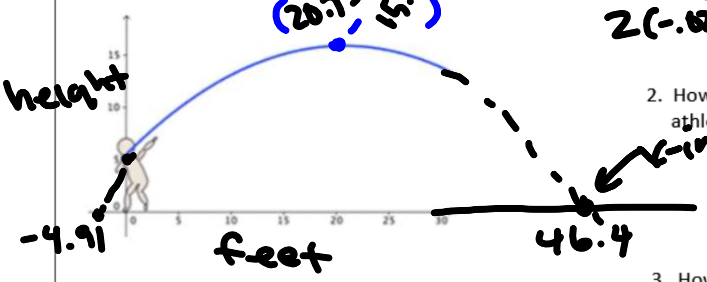
Bell Ringer

Wednesday 1/9

A shot-put throw can be modeled using the equation $y = -0.0241x^2 + x + 5.5$, where x is distance traveled (in feet) and y is the height (also in feet). How long was the throw?

a b c

$(20.75, 15.97)$



$-0.0241(20.75)^2 + 20.75 + 5.5$

y

1. How high did the shot-put go in the air? $\left(-\frac{b}{2a}, \quad \right)$

$\frac{-1}{2(-.0241)} = 20.75$

15.97 ft

2. How high was the shot-put when it left the athletes hand?

5.5 ft

3. How far from the athlete did the shot-put land?

$0 = -0.0241x^2 + x + 5.5$

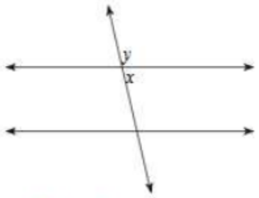
$$\frac{-1 \pm \sqrt{1^2 - 4(-.0241)(5.5)}}{2(-0.0241)} = 46.4 \text{ ft}$$

correct 6.4-6.5B

6.4-6.5B Parallel Lines and Transversals Proofs Key

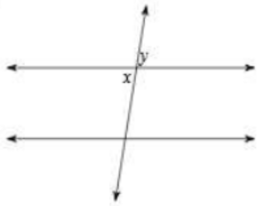
Identify each pair of angles as corresponding, alternate interior, alternate exterior, consecutive interior, vertical, or linear pair.

1)



adjacent

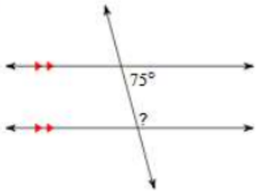
2)



vertical

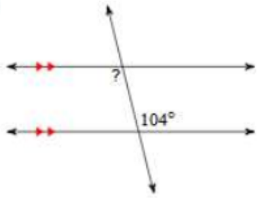
Find the measure of each angle indicated.

3)



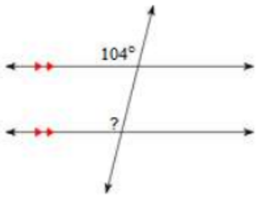
105°

4)



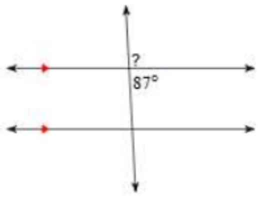
104°

5)



104°

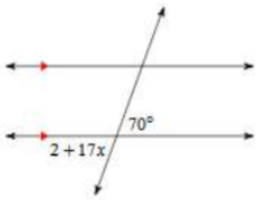
6)



93°

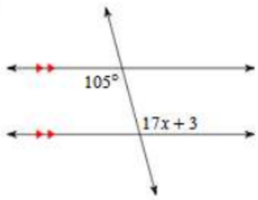
Solve for x.

7)



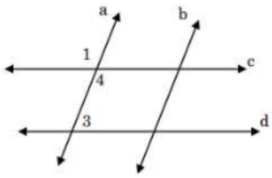
4

8)



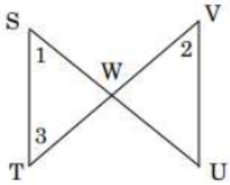
6

9) Given: $\angle 1$ and $\angle 3$ are supplementary
Prove: $c \parallel d$



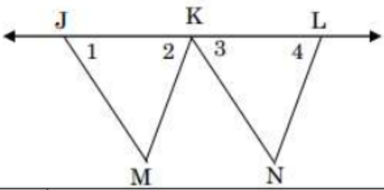
Statement	Reason
1. $\angle 1$ and $\angle 3$ are supplementary	1. Given
2. $\angle 1 \cong \angle 4$	2. Vertical Angles are Congruent
3. $\angle 4$ and $\angle 3$ are supplementary	3. Transitive Property
4. $c \parallel d$	4. Converse of Same Side Interior Angle Theorem

10) Given: $\angle 2 \cong \angle 1$
$\angle 1 \cong \angle 3$
Prove: $\overline{ST} \parallel \overline{UV}$



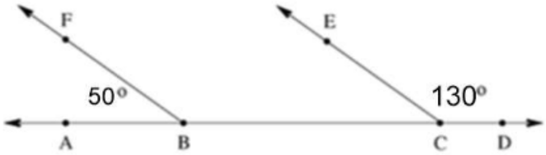
Statement	Reason
1. $\angle 2 \cong \angle 1$	1. Given
2. $\angle 1 \cong \angle 3$	2. Given
3. $\angle 2 \cong \angle 3$	3. Transitive Property of Congruence
4. $\overline{ST} \parallel \overline{UV}$	4. Converse of Alternate Interior Angle Theorem

11) Given: $\overline{JM} \parallel \overline{KN}$
$\angle 1 \cong \angle 2$ and $\angle 3 \cong \angle 4$
Prove: $\overline{KM} \parallel \overline{LN}$



Statement	Reason
1. $\overline{JM} \parallel \overline{KN}$	1. Given
2. $\angle 1 \cong \angle 2$ and $\angle 3 \cong \angle 4$	2. Given
3. $\angle 1 \cong \angle 3$	3. Corresponding Angles are Congruent
4. $\angle 1 \cong \angle 4$	4. Transitive Property of Congruence
5. $\angle 2 \cong \angle 4$	5. Transitive Property of Congruence
6. $\overline{KM} \parallel \overline{LN}$	6. Converse of Corresponding Angles Theorem

12) Given: Line ABCD
$m\angle ECD = 130^\circ$
$m\angle ABF = 50^\circ$
Prove: $BF \parallel CE$

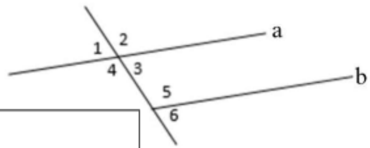


Statement	Reason
Line ABCD, $m\angle ECD = 130^\circ, m\angle ABF = 50^\circ$	1. Given
$\angle ECD$ and $\angle ECB$ are supplementary	2. Definition of Linear Pair
3. $m\angle ECD + m\angle ECB = 180^\circ$	Definition of supplementary
4. $130^\circ + m\angle ECB = 180^\circ$	Substitution property of equality
$m\angle ECB = 50^\circ$	5. Subtraction property of equality
$m\angle ECB = m\angle ABF$	6. Substitution property of equality
$BF \parallel CE$	7. Converse of same side int. angles theorem

Statements:
a. $m\angle ECD + m\angle ABF = 180^\circ$
b. $m\angle ECD + m\angle ECB = 180^\circ$
c. $50^\circ + m\angle ECB = 180^\circ$
d. $130^\circ + m\angle ECB = 180^\circ$
e. $\angle ECD$ & $\angle ECB$ are supplementary

Reasons:
a. Definition of supplementary
b. Definition of Linear Pair
c. Converse of corresponding angles theorem
d. Addition property of equality
e. Given
f. if ll lines, Same side interior angles are congruent
g. Subtraction property of equality
h. Converse of same side int. angles theorem
i. Substitution property of equality

13) Given: $m\angle 3 = 60^\circ$, $m\angle 5 = 2x - 8$, $a \parallel b$
Prove: $x = 64$



Statement	Reason
$m\angle 3 = 60^\circ$, $m\angle 5 = 2x - 8$, $a \parallel b$	1. Given
$180 = m\angle 3 + \angle 5$	2. If ll lines, Same Side Interior Angles are Supplementary
3. $180^\circ = 60 + 2x - 8$	Substitution property of equality
$180 = 52 + 2x$	4. Substitution property of equality
5. $128 = 2x$	Subtraction property of equality
6. $64 = x$	Division property of equality
7. $64 = x$	Symmetric property of equality

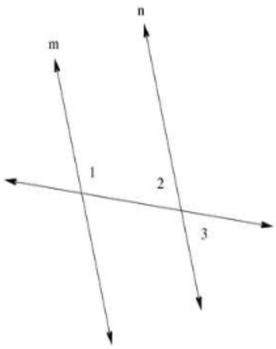
Statements:
a. $64 = x$
b. $180^\circ = 60 + 2x - 8$
c. $64 = x$
d. $x = 64$
e. $128 = 2x$

Reasons:
a. Vertical angles are congruent
b. Substitution property of equality
c. Given
d. Addition property of equality
e. If ll lines, Same Side Interior Angles are Supplementary
f. Subtraction property of equality

14) Given: $\angle 1 = 115^\circ$, $\angle 1$ and $\angle 3$ are supplementary

Prove: $m \parallel n$

Statement	Reason
1. $\angle 1 = 115^\circ$, $\angle 1$ and $\angle 3$ are supplementary	Given
2. $m\angle 1 + m\angle 3 = 180^\circ$	Definition of Supplementary
$115 + \angle 3 = 180^\circ$	3. Substitution property of equality
4. $\angle 3 = 65^\circ$	Subtraction Property of Equality
$\angle 2 = \angle 3$	5. Vertical angles are equal in measure
6. $\angle 2 = 65^\circ$	Substitution Property of Equality
$\angle 1$ and $\angle 2$ are supplementary	7. Definition of supplementary
$m \parallel n$	8. Converse of same side interior angles



Statements:

a. $\angle 2 = 65^\circ$

b. $\angle 1 = 115^\circ$, $\angle 1$ and $\angle 3$ are supplementary

c. $m\angle 1 + m\angle 3 = 180^\circ$

d. $\angle 1 + \angle 2 = 180^\circ$

e. $\angle 2 + \angle 3 = 180^\circ$

f. $\angle 2 = \angle 1$

g. $\angle 3 = 65^\circ$

Reasons:

a. Definition of supplementary

b. Vertical angles are equal in measure

c. Converse of corresponding angles

d. Addition property of equality

e. Converse of same side interior angles

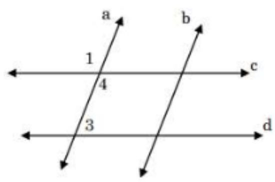
f. Same side interior angles are congruent

g. Substitution property of equality

15) Given: $\angle 1$ and $\angle 3$ are supplementary, $m\angle 3 = 120^\circ$

Prove: $c \parallel d$

Statement	Reason
$\angle 1$ and $\angle 3$ are supplementary	1. Given
$m\angle 3 + m\angle 1 = 180^\circ$	2. Definition of supplementary
3. $m\angle 3 = 120^\circ$	Given
$120^\circ + m\angle 1 - 180^\circ$	4. Substitution property of equality
5. $m\angle 1 = 60^\circ$	Subtraction property of equality
6. $\angle 1 = \angle 4$	Vertical Angles are equal in measure
$\angle 4 = 60^\circ$	7. Substitution property of equality
7. $\angle 1$ and $\angle 4$ are supplementary	Definition of supplementary
$c \parallel d$	8. Converse of same side interior angles



Statements:

a. $\angle 1 = \angle 4$

b. $\angle 3 + 140^\circ = 180^\circ$

c. $60^\circ + \angle 4 = 180^\circ$

d. $m\angle 3 = 120^\circ$

e. $\angle 1$ and $\angle 4$ are supplementary

f. $\angle 3$ and $\angle 4$ are supplementary

g. $m\angle 1 = 60^\circ$

Reasons:

a. Definition of supplementary

b. Converse of same side interior angles

c. Converse of corresponding angles

d. Addition property of equality

e. Substitution property of equality

i. Given

g. Subtraction property of equality

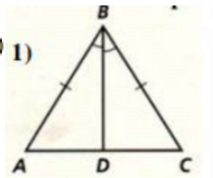
correct 8.1A

1/2 pt each

Name: KEY

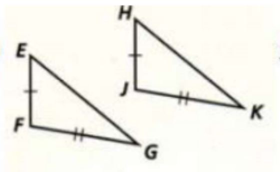
Section 8.A
Congruent Triangle Worksheet

A) Determine whether the following triangles are congruent.
B) If they are, name the triangle congruence (Pay attention to proper correspondence when naming the triangles) and then identify the theorem or postulate (SSS, SAS, ASA, AAS, HL) that supports your conclusion.
C) Be sure to show any additional congruence markings you used in your reasoning.
D) If the triangles cannot be proven congruent, state "not possible." Then give the reason it is not possible.

1)


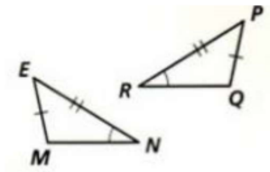
Congruence: SAS
ΔABD ≅ Δ CBD

Reason:

2)


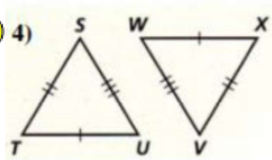
Congruence: Not Possible
ΔEFG ≅ Δ ________

Reason:

3)


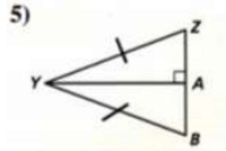
Congruence: Not Possible
ΔEMN ≅ Δ ________

Reason:

4)


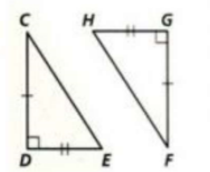
Congruence: SSS
ΔSTU ≅ Δ VXW

Reason:

5)


Congruence: HL
ΔYZA ≅ Δ YBA

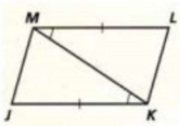
Reason:

6)


Congruence: SAS
ΔCDE ≅ Δ FGH

Reason:

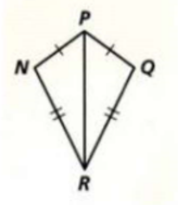
2 pts

7) 

Congruence: SAS

ΔKJM ≅ Δ MLK

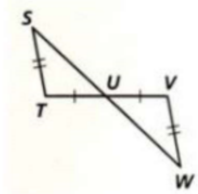
Reason:

8) 

Congruence: SSS

ΔNPR ≅ Δ QPR

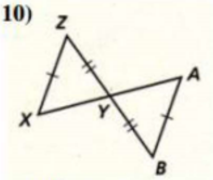
Reason:

9) 

Congruence: Not Possible

ΔSTU ≅ Δ_______

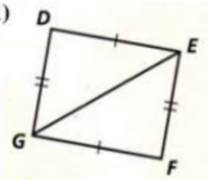
Reason:

10) 

Congruence: Not Possible

ΔXYZ ≅ Δ_______

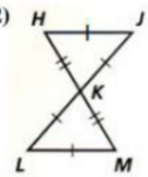
Reason:

11) 

Congruence: SSS

ΔDEG ≅ Δ FGE

Reason:

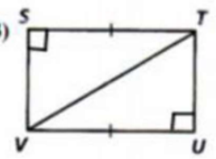
12) 

Congruence: SAS or SSS

ΔHJK ≅ Δ MLK

Reason:

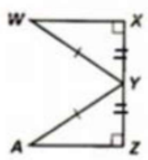
3 pts

13) 

Congruence: HL

ΔSTV ≅ Δ UVT

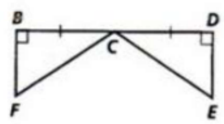
Reason:

14) 

Congruence: HL

ΔWXY ≅ Δ AZY

Reason:

15) 

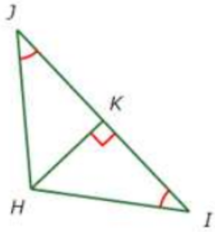
Congruence: Not Possible

ΔBCF ≅ Δ_______

Reason:

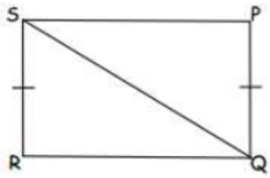
3 pts

16. Given: $\angle I \cong \angle J$
$\overline{HK} \perp \overline{IJ}$
Prove: $\overline{JK} \cong \overline{IK}$



Statement	Reason
1. $\angle I \cong \angle J$	1. Given
2. $\overline{HK} \perp \overline{IJ}$	2. Given
3. $\angle HKI$ and $\angle HKJ$ are right angles	3. Definition of Perpendicular
4. $\angle HKI \cong \angle HKJ$	4. Right angles are congruent
5. $\overline{HK} \cong \overline{HK}$	5. Reflexive Property of Congruence
6. $\triangle HKI \cong \triangle HKJ$	6. AAS
7. $\overline{JK} \cong \overline{IK}$	7. CPCTC

17. Given: $\overline{RS} \cong \overline{PQ}$
$\angle P$ and $\angle R$ are right angles
Prove: $\triangle PQS \cong \triangle RSQ$



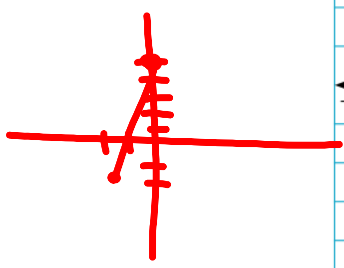
Statement	Reason
1. $\overline{RS} \cong \overline{PQ}$	1. Given
2. $\angle P$ and $\angle R$ are right angles	2. Given
3. ΔPQS and ΔRSQ are right triangles	3. Definition of Right Triangle
4. $\overline{SQ} \cong \overline{SQ}$	4. Reflexive Property of Congruence
5. $\triangle PQS \cong \triangle RSQ$	5. HL

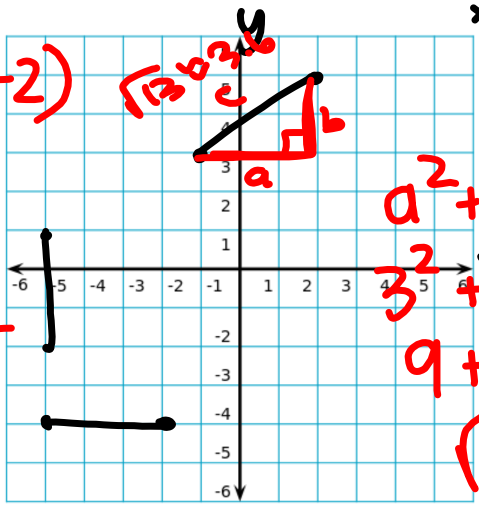
correct 8.1B ws TOMORROW

Distance Formula Review

Find the distance between (2, 5) and (-1, 3)

(0,5) (-2,-2)





$d=\sqrt{(y_2-y_1)^2+(x_2-x_1)^2}$

$a^2+b^2=c^2$

$3^2+2^2=c^2$

$9+4=c^2$

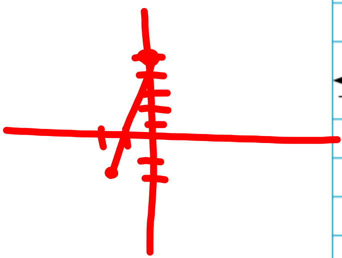
$\sqrt{13}=\sqrt{c^2}$

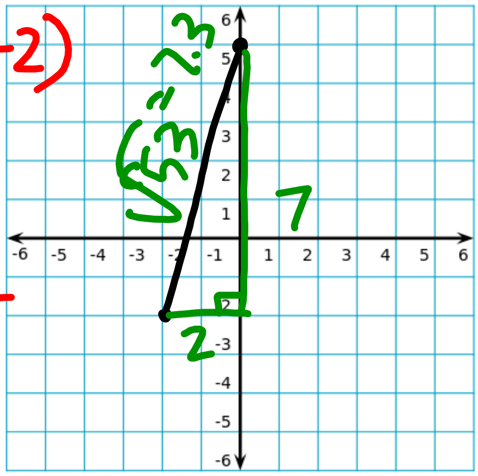
Distance Formula Review

Find the distance between (2, 5) and (-1, 3)

x y

$(0,5)\ (-2,-2)$





$d=\sqrt{(y_2-y_1)^2+(x_2-x_1)^2}$

$2^2+7^2=c^2$

$4+49$

$\sqrt{53}=\sqrt{c^2}$

Reasons for Proofs Chapter 8

Triangles Postulate & Theorems

Triangle Sum Theorem: The angles of a triangle add to 180°
SSS Postulate
SAS Postulate
ASA Postulate
AAS Theorem
HL Theorem
CPCTC: Corresponding Parts of Congruent Triangles are Congruent

Isosceles Triangles

Definition of an Isosceles Triangle: Two sides of a triangle are congruent
Isosceles Triangle Theorem: If two sides of a triangle are congruent, then the angles opposite those sides are congruent.

Midsegments of a Triangle

Definition of a Midsegment: A segment connecting the midpoints of two sides of a triangle.
Midsegment Triangle Theorem: The midsegment is parallel to the third side and is half as long.

Exterior Angles

Exterior Angle Theorem: The exterior angle is equal to the sum of the two remote ***interior angles.***

Constructions

Inscribed Triangles: Construct the three Angle Bisectors. Place the compass on the incenter and draw a circle connecting the incenter to a point on any side perpendicular to the incenter.
Circumscribed Triangles: Construct the three Perpendicular Bisectors. Place the compass on the Circumcenter and draw a circle from one of the vertices.

Perpendicular Bisectors

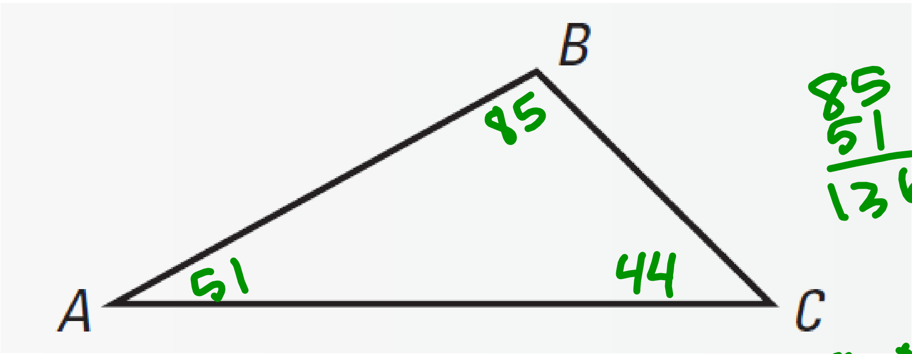
Perpendicular Bisector Theorem: If a point is on the perpendicular bisector of a segment, then it is equidistant from the endpoints of the segment.
Converse of the Perpendicular Bisector Theorem: If a point is equidistant from the endpoints of a segment, then it is on the perpendicular bisector of the segment.

Medians of a Triangle

Definition of a Median: A segment whose endpoints are a vertex and the midpoint of the opposite side.
Centroid: The point of concurrency of the medians.
Medians of a Triangle Theorem: The medians of a triangle are concurrent at a point that is two thirds the distance from each vertex to the midpoint of the opposite side.

Triangle sum Theorem:

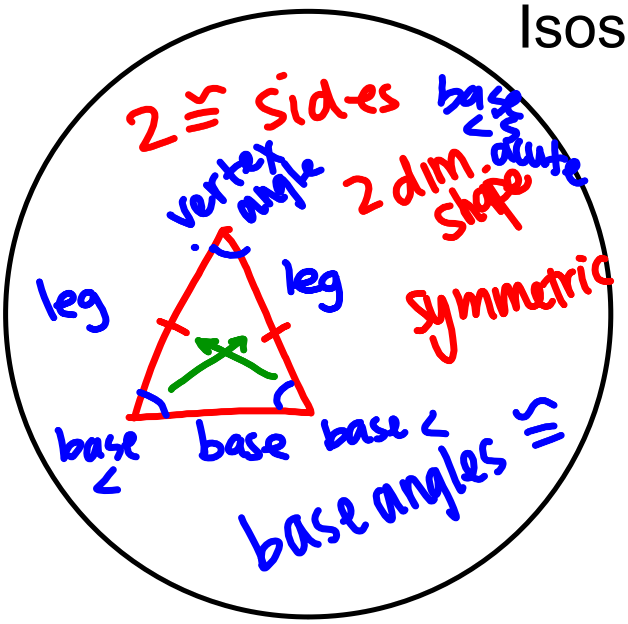
Three angles in a triangle sum to <u>180°</u>



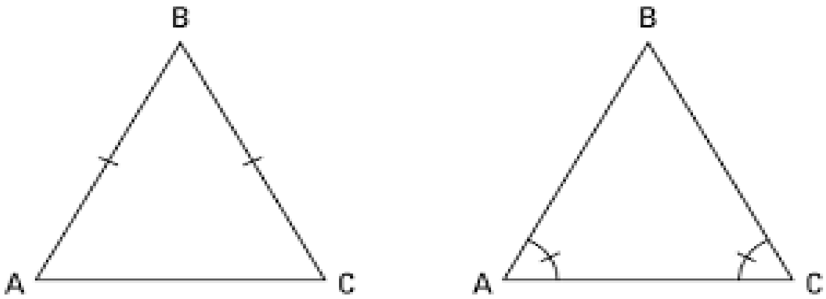
$$\begin{array}{r} 85 \\ 51 \\ \hline 136 \end{array} \qquad - \begin{array}{r} 180 \\ 136 \\ \hline 44 \end{array}$$

$m\angle A + m\angle B + m\angle C =$ 180°

Isosceles Triangles

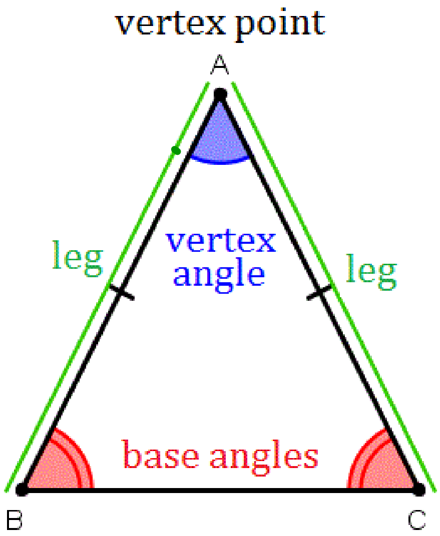


Isosceles Triangle Theorem

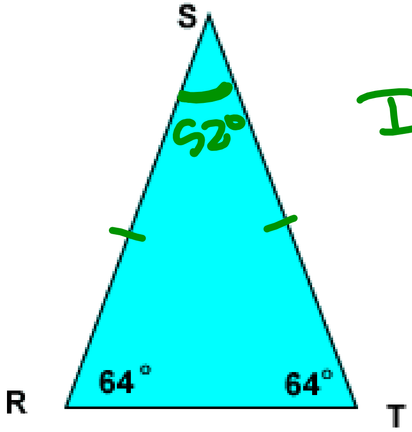


If you know this . . . . . . you can conclude this.

If △, then △


vertex point
A
leg
vertex
angle
leg
base angles
B
C

What conclusions can we make??



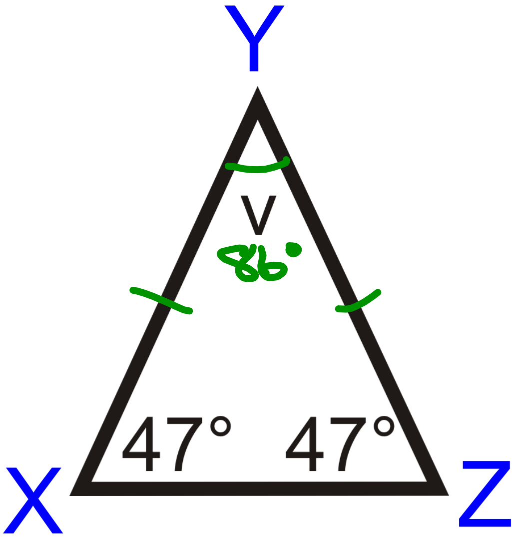
Isosceles

base ∠s are ≅

What conclusions can we make?

Isos

$\overline{XY} \cong \overline{ZY}$

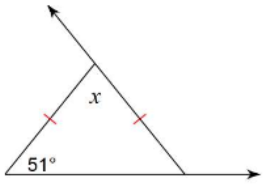


Hand out 8.2 Isosceles Triangles Proofs ws

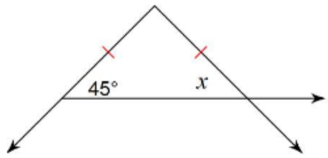
Section 8.2 Isosceles Triangle Proofs Worksheet Name: ______________________Hr:_____

Find the value of x.

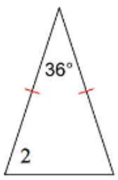
1.



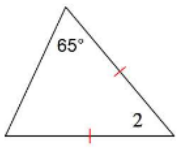
2.



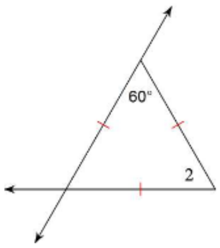
3. $m\angle 2 = 11x + 6$



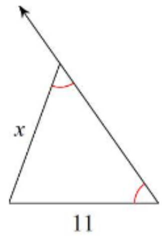
4. $m\angle 2 = x + 58$



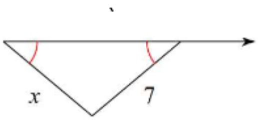
5. $m\angle 2 = x + 71$



6.



7.



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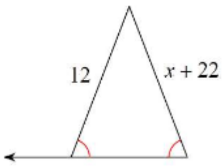
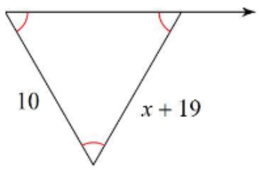
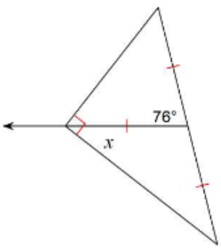


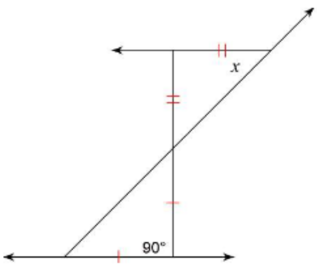
9.



10.

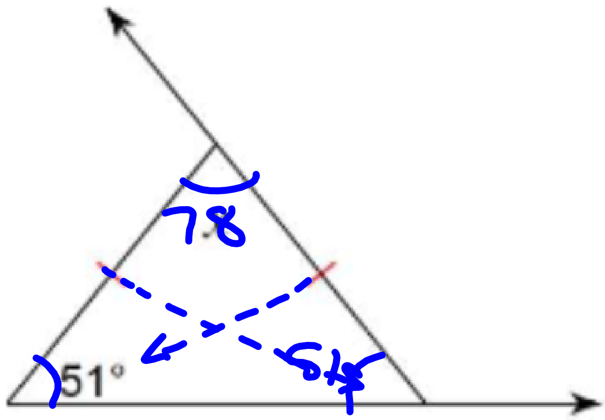


11.



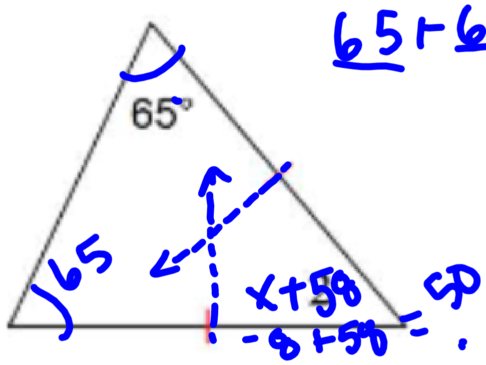
1. Find the value of x

180
− 102



4. Find the value of x

$$m\angle 2 = x + 58$$



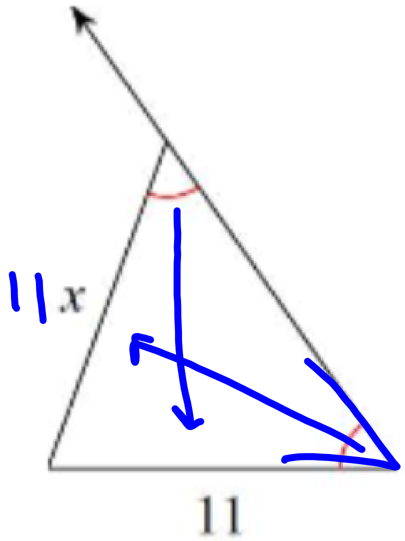
$65 + 65 + x + 58 = 180$

$188 + x = 180$

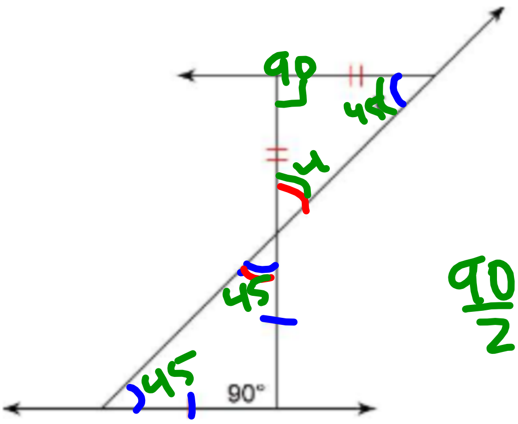
$-\cancel{188} \quad -188$

$\boxed{x = -8}$

6. Find the value of x



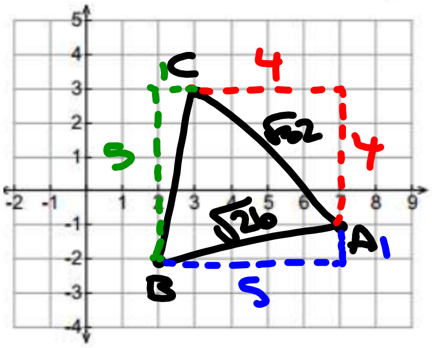
11. Find the value of x



$\frac{90}{2}$

do #12-13 together

12. Given: $\triangle ABC$ has vertices A $(7, -1)$, B $(2, -2)$ and C $(3, 3)$
Prove: $\triangle ABC$ is an isosceles triangle



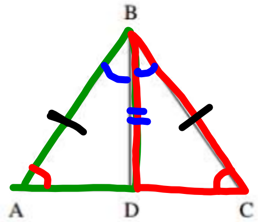
$\overline{AB} = \; 5^2 + 1^2 = c^2$
$\sqrt{26} \approx 5.09 \quad 25 + 1 = c^2 \Rightarrow \sqrt{26} = \sqrt{c^2}$

$\overline{BC} = 1^2 + 5^2 = c^2 \quad c = \sqrt{26}$

$\overline{AC} = 4^2 + 4^2 = c^2 \quad \overline{AB} \cong \overline{BC}$
$\sqrt{32} = \sqrt{c^2}$
$c = \sqrt{32}$

2 sides are =

13. Given: $\triangle ABC$ is isosceles
$\overline{BD}$ bisects $\angle ABC$
Prove: $\triangle ABD \cong \triangle CBD$

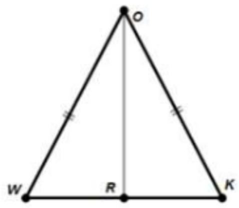


$\overline{BD} \cong \overline{BD}$ Refl.

SAS

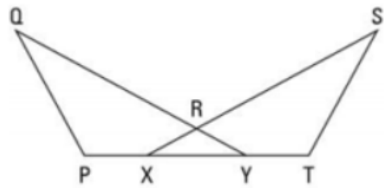
Statement	Reason
1. $\triangle ABC$ is isosceles	1. Given
2. $\overline{AB} \cong \overline{CB}$	2. Def'n of Isos. $\triangle$ (S)
3. $\overline{BD}$ bisects $\angle ABC$	3. Given
4. $\angle ABD \cong \angle CBD$	4. Def'n an angle bisector (A)
5. $\angle A \cong \angle C$	5. Base $\angle$s in isos. $\triangle$ are $\cong$ (A)
6. $\triangle ABD \cong \triangle CBD$	6. AAS

14. Given: $\triangle WOK$ is isosceles
R is the midpoint of $\overline{WK}$
Prove: $\angle OWR \cong \angle OKR$



Statement	Reason
1. $\triangle WOK$ is isosceles	1.
2. $\overline{WO} \cong \overline{KO}$	2.
3. R is the midpoint of $\overline{WK}$	3.
4. $\overline{WR} \cong \overline{KR}$	4.
5. $\overline{OR} \cong \overline{OR}$	5.
6. $\triangle WRO \cong \triangle KRO$	6.
7. $\angle OWR \cong \angle OKR$	7.

15. Given: $\triangle XRY$ is isosceles
$\overline{PQ} \cong \overline{TS}$
$\angle Q \cong \angle S$
Prove: $\overline{QY} \cong SX$



Statement	Reason
1. $\triangle XRY$ is isosceles	1.
2. $\angle x \cong \angle y$	2.
3. $\overline{PQ} \cong \overline{TS}$	3.
4. $\angle Q \cong \angle S$	4.
5. $\triangle YQP \cong \triangle XST$	5.
6. $\overline{QY} \cong SX$	6.