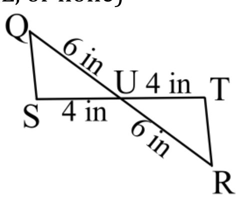
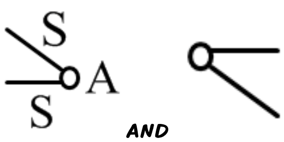
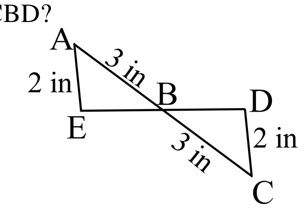
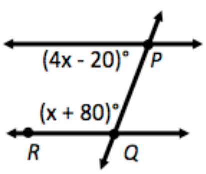
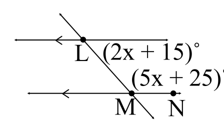
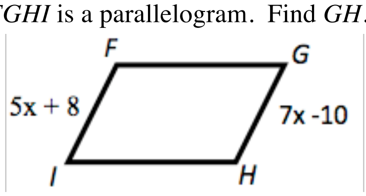
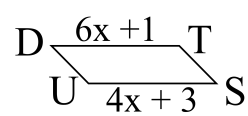
Name: ______________________________ Per: _____

Geometry: 1st Semester Benchmark Exam
Example Sheet 2

Study Guide Problem & Solution		New Example
Given the lengths marked on the figure and that $\angle QUS$ and $\angle RUT$ are vertical angles, what postulate or theorem, *if any*, can be used to prove that $\Delta QSU \cong \Delta RTU$? (SSS, SAS, AAS, ASA, HL, or none)  **VERTICAL ANGLES ARE CONGRUENT, SO WE CAN MARK THE ANGLES: $\angle$ QUS AND $\angle$RUT. WE CAN ALSO MARK THE SIDES WE KNOW ARE CONGRUENT, TO CREATE A PATH THAT LOOKS LIKE:**  **AND** **ANSWER: SAS**	16	Given the lengths marked on the figure and that $\angle ABE$ and $\angle CBD$ are vertical angles, what postulate or theorem, *if any*, can be used to prove that $\Delta ABE \cong \Delta CBD$? 
Find $m\angle PQR$.  **THESE ARE SAME SIDE INTERIOR (S.S.I.) ANGLES—THEY'RE NEXT TO EACH OTHER—, WHICH MEANS THEY ADD UP TO 180° (SUPPLEMENTARY).** $4x - 20 + x + 80 = 180$ $5x + 60 = 180$ $5x = 120$ $x = 24$ **PLUG IT IN!** $m\angle PQR = x + 80$ $m\angle PQR = 24 + 80$ **$m\angle PQR = 104°$**	17	Find $m\angle LMN$. 
FGHI is a parallelogram. Find *GH*.  **SINCE IT IS A PARALLELOGRAM THE OPPOSITE PARTS ARE CONGRUENT. SO, SET THEM EQUAL.** 5x + 8 = 7x – 10 - 5x -5x 8 = 2x – 10 +10 + 10 18 = 2x 9 = x x = 9 **NOW PLUG IT IN!** *GH* = 7x – 10 *GH* = 7(9) – 10 *GH* = 63 – 10 ***GH* = 53**	18	*DUST* is a parallelogram. Find *US*. 

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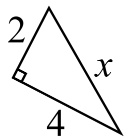
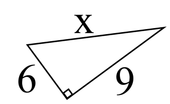
Find the value of x. Express your answer in simplest radical form.



$a^2 + b^2 = c^2$
$2^2 + 4^2 = x^2$
$4 + 16 = x^2$
$20 = x^2$
$\sqrt{20} = x$
$\sqrt{4}\sqrt{5} = x$
$2\sqrt{5} = x$
$\mathbf{x = 2\sqrt{5}}$

Find the value of x. Express your answer in simplest radical form.



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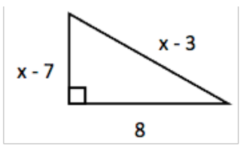
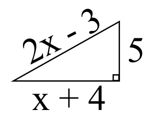
Find the area of the figure.



$A = \frac{bh}{2}$
$A = \frac{(8)(x-7)}{2}$
$A = 4(x-7)$
$\mathbf{A = 4x - 28}$

Find the area of the figure.



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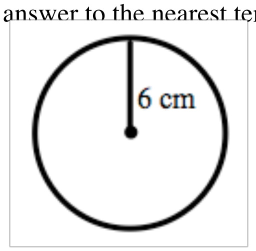
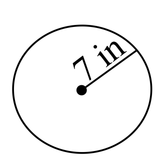
Find the circumference of the circle. Use 3.14 for π, and round your answer to the nearest tenth.



$C = 2\pi r$
$C = 2(3.14)(6)$
$C = 6.28(6)$
$C \approx 37.68$
$\mathbf{C \approx 37.7}$ **cm**

Find the circumference of the circle. Use 3.14 for π, and round your answer to the nearest tenth.



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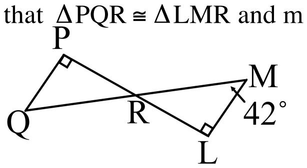
Given that $\Delta PQR \cong \Delta LMR$ and $m\angle M = 42^\circ$, find $m\angle PRQ$.



This triangle is missing an angle. Add the other two and subtract from 180°.

$90^\circ + 42^\circ = 132^\circ$

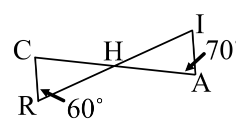
$180^\circ - 132^\circ = 48^\circ$

$m\angle PRQ = m\angle LRM$ $\qquad m\angle LRM = 48^\circ$

(because they're vertical)

$\mathbf{m\angle PRQ = 48^\circ}$

Given that $\Delta CRH \cong \Delta AIH$, $m\angle A = 70^\circ$, and $m\angle R = 60^\circ$ find $m\angle CHR$.



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Identify one pair of each of the following:

a) Parallel Segments

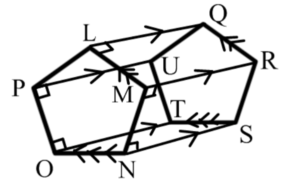
$\overline{LQ} \parallel \overline{MR}$; $\overline{OT} \parallel \overline{NS}$; $\overline{LM} \parallel \overline{QR}$; $\overline{ON} \parallel \overline{TS}$...

b) Perpendicular Segments

$\overline{LQ} \perp \overline{LM}$; $\overline{MN} \perp \overline{NS}$; $\overline{OT} \perp \overline{OP}$

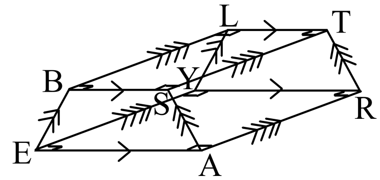
c) Skew Segments

$\overline{LM}$ & $\overline{NS}$; $\overline{OP}$ & $\overline{UR}$; $\overline{QR}$ & $\overline{OT}$

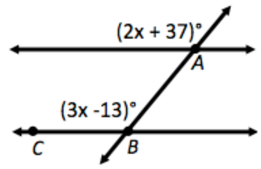


Identify one pair of each of the following:

a) Parallel Segments
b) Perpendicular Segments
c) Skew Segments



Find m∠ABC.



CORRESPONDING ANGLES (C.A) ARE CONGRUENT.

2x + 37 = 3x – 13
-2x -2x
37 = x – 13
+13 +13
50 = x

PLUG IT IN!

m∠ABC = 3x – 13
m∠ABC = 3(50) – 13
m∠ABC = 150 – 13
m∠ABC = 137°

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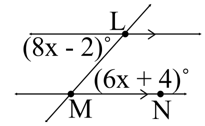
Find m∠LMN.



Identify the property that justifies each statement.

a) x = 3. So 4x = 4(3)
SUBSTITUTION
b) GH = GH
REFLEXIVE PROP. OF EQUALITY
c) ∠ABC ≅ ∠DEF and ∠DEF ≅ ∠GHI. So ∠ABC ≅ ∠GHI
TRANSITIVE PROP. OF CONGRUENCE
d) 17 = AB, so AB = 17
SYMMETRIC PROP. OF EQUALITY

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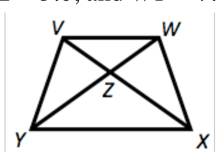
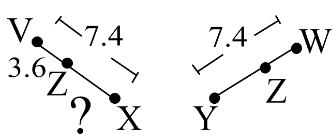
Create an example for each of the following properties.

a) Reflexive Property of CONGRUENCE
b) Symmetric Property of EQUALITY
c) Transitive Property of CONGRUENCE
d) Substitution Property of EQUALITY

Given isosceles trapezoid $VWXY$ with $\overline{VY} \cong \overline{WX}$, $VZ = 3.6$, and $WY = 7.4$. Find ZX.



Diagonals are congruent, so VX = WY.



ZX = 7.4 - 3.6 = ***3.8***

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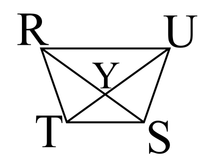
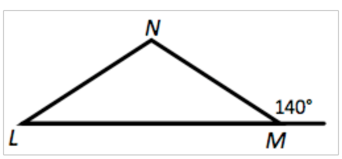
Given isosceles trapezoid $JUST$ with $\overline{JT} \cong \overline{US}$, $TY = 4.7$, and $RS = 11.2$. Find YU.



ΔLMN is an isosceles triangle with vertex $\angle N$. $m\angle L = ?$



DETERMINE THE MEASURE OF THE ANGLE NEXT TO THE 140° ANGLE. THEY MAKE A LINE, SO...

$m\angle NML = 180° - 140° = 40°$

THE TRIANGLE IS ISOSCELES, SO THE BASE ANGLES ARE THE SAME.

m∠L = 40°

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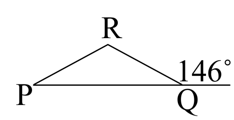
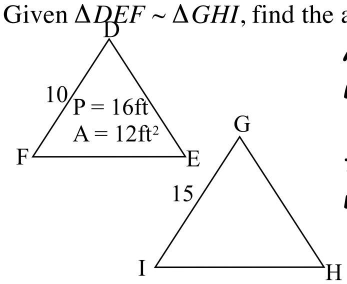
ΔPQR is an isosceles triangle with vertex $\angle R$. $m\angle P = ?$



Given $\Delta DEF \sim \Delta GHI$, find the area of ΔGHI.



AREA IS ALWAYS SQUARED. TO DETERMINE THE SIZE OF A SIMILAR AREA, SET UP A FRACTION USING THE SIDES AND SQUARE IT. SET IT EQUAL TO THE AREA FRACTION.

$$\left(\frac{10}{15}\right)^2 = \frac{12}{x}$$

$$\left(\frac{2}{3}\right)^2 = \frac{12}{x}$$

$$\frac{4}{9} = \frac{12}{x}$$

CROSS MULTIPLY!

$4x = 108$

$x = 27$

AREA OF ΔGHI IS 27 FT²

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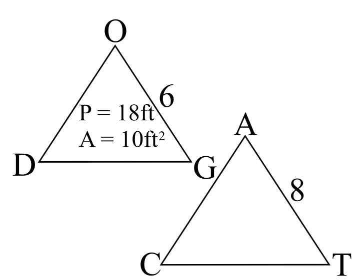
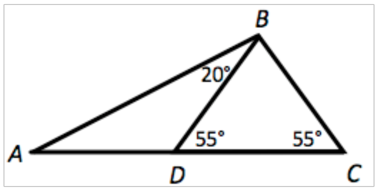
Given $\Delta DOG \sim \Delta CAT$, find the area of ΔCAT.



Classify ΔABC by its angle measures, given $m\angle ACB = 55°$, $m\angle BCD = 55°$, and $m\angle ABD = 20°$.



In order to classify ΔABC by its angles, we need more information about its angles. If they're <u>all</u> acute, then the triangle is acute. If one of the angles is right, it's a right. If one of the angles is obtuse, it's obtuse.

Find the missing angle in ΔCBD.

$$55° + 55° + m\angle CBD = 180°$$
$$110° + m\angle CBD = 180°$$
$$m\angle CBD = 70°$$

$\angle B$ is made of 2 angles. Add them up to find its measure:

$$m\angle CBD + m\angle ABD = m\angle B$$
$$70° + 20° = m\angle B$$
$$90° = m\angle B$$
$$m\angle B = 90°$$

$m\angle B$ is $90°$, so ΔABC is a RIGHT TRIANGLE.

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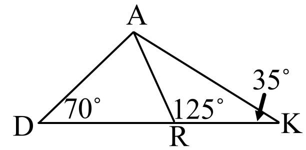
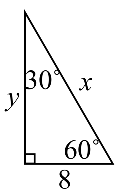
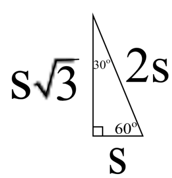
Classify ΔRAD by its angle measures, given $m\angle ADR = 70°$, $m\angle ARK = 125°$, and $m\angle AKR = 35°$.



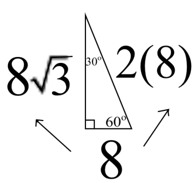
Find the values of x and y. Express your answers in simplest radical form.



First, you have to know the rules about 30-60-90 triangles.



Now, apply that rule to the given triangle.



$x = 2(8)$ and $y = 8\sqrt{3}$

$x = 16$

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Find the values of x and y. Express your answers in the simplest radical form.