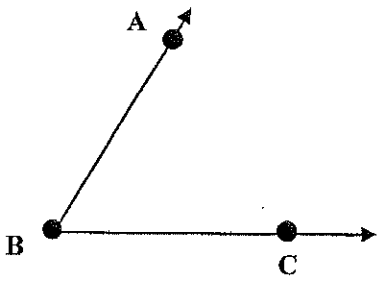
Core Geometry
Final Exam Review #1

Name Key

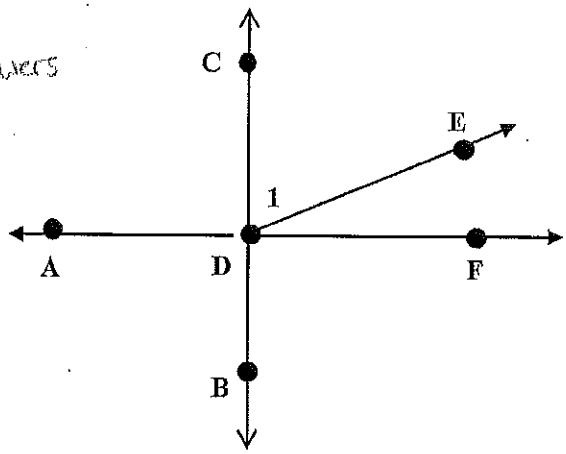
I. Refer to the angle to the right to answer each question.



1. Name the angle. $\angle ABC$, $\angle CBA$, or $\angle B$
2. Name the vertex. B
3. Name the sides. $\overrightarrow{BA}$ and $\overrightarrow{BC}$
4. Use a protractor to find the degree measure of the angle.
5. Classify the angle as acute, right, obtuse, or straight. acute

II. Refer to Figure A to name each of the following.

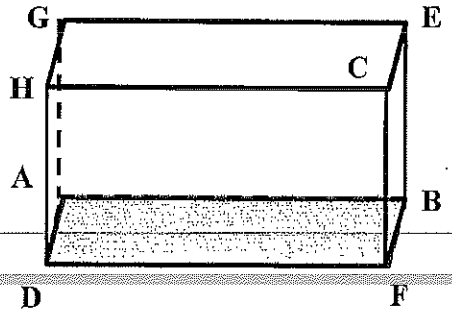
Figure A



1. Two different ways to name $\overleftrightarrow{AF}$ $\overleftrightarrow{DF}$, line AF, $\overleftrightarrow{AD}$, etc
2. Three collinear points. A, D, F or C, D, B
3. Three noncollinear points. C, D, E * multiple possible answers
4. Two segments that have A as an endpoint. $\overline{AD}$, $\overline{AF}$
5. Two rays with endpoint D. $\overrightarrow{DC}$, $\overrightarrow{DE}$, $\overrightarrow{DF}$, $\overrightarrow{DB}$, or $\overrightarrow{DA}$
6. Two other ways to name $\angle CDE$ $\angle 1$, $\angle EDC$
7. Name the vertex of $\angle CDE$. D
8. Name the sides of $\angle CDE$. $\overrightarrow{DC}$, $\overrightarrow{DE}$
9. Where do $\overleftrightarrow{CB}$ and $\overleftrightarrow{AF}$ intersect? point D
10. Does $\overrightarrow{DA}$ and $\overrightarrow{AD}$ represent the same ray? NO!

III. Refer to Figure B to name each of the following.

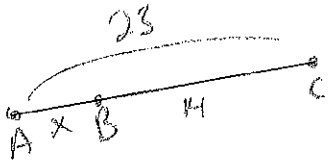
Figure B



1. A segment parallel to $\overline{GE}$. $\overline{HC}$, $\overline{AB}$, or $\overline{DF}$
2. A segment that intersects $\overline{GE}$. $\overline{GA}$, $\overline{GH}$, $\overline{CE}$, and $\overline{EB}$
3. A segment that is skew to $\overline{GE}$. $\overline{HD}$, $\overline{CF}$, $\overline{FB}$, and $\overline{AD}$
4. A plane parallel to ABFD. GECH
5. A plane that intersects ABFD. GADH, HCFD, or EBFC
6. Where do planes HCFD and HGEC intersect? $\overline{HC}$
7. Where do planes GECH, EBFC, and HCFD intersect? point C

IV. Please draw a diagram, label your diagram, write an equation, and show all of your work.

1. B is between A and C. If AC = 23, AB = x, and BC = 14, find AB.



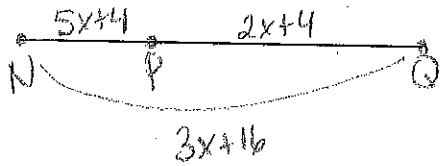
$x + 14 = 23$

$x = 9$

x = 9

AB = 9

2. P is between N and Q. If NP = 5x + 4, PQ = 2x + 4, and NQ = 3x + 16, find the value of x and NQ.



$5x+4+2x+4=3x+16$

$7x+8=3x+16$

$4x=8$

$x=2$

$3(2)+16$

x = 2

NQ = 24

3. C is the midpoint of $\overline{AB}$. If AC = x + 3 and BC = 6x – 2, find the value of x and BC.

$x+3=6x-2$

$5=5x$

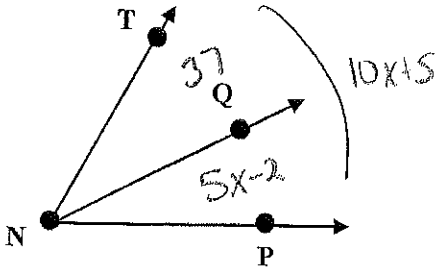
$x=1$

x = 1

BC = 4

V. Please label your diagram, write an equation, and show all of your work.

1. $\overrightarrow{NQ}$ is between $\overrightarrow{NP}$ and $\overrightarrow{NT}$. If m<PNQ = 5x – 2, m<QNT = 37°, and m<PNT = 10x + 5, find m<PNT.



$37+5x-2=10x+5$

$5x+35=10x+5$

$30=5x$

$x=6$

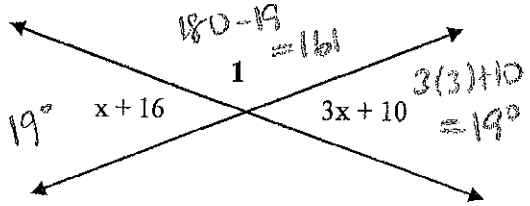
$10(6)+5$

$=65$

x = 6

m<PNT = 65°

2. Find x and m<1.



$x+16=3x+10$

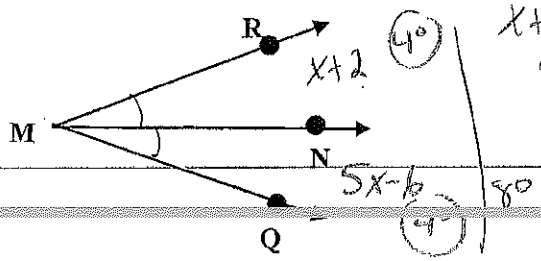
$6=2x$

$x=3$

x = 3

m<1 = 161°

3. Suppose $\overrightarrow{MN}$ bisects <RMQ, m<RMN = x + 2, and m<NMQ = 5x – 6. Find the value of x and m<RMQ.



$x+2=5x-6$

$8=4x$

$x=2$

x = 2

m<RMQ = 8°

4. Suppose <P is a complement of <Q. Find x and m<P, if m<P = 6x + 7 and m<Q = 10x + 3.

add up to 90°

$6x+7+10x+3=90$

$16x+10=90$

$16x=80$

$x=5$

$6(5)+7$

$=37$

x = 5

m<P = 37°

VI. Find the complement and supplement of each angle.

1. 48°

comp = 42° supp = 132°

2. 102°

comp = none supp = 78°

VII. Write the converse, inverse, and contrapositive of the given conditional statement.

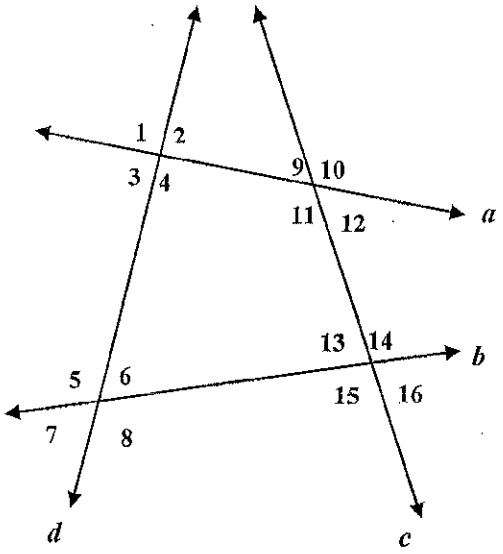
If you complete the final exam review packet, then you will do well on the final. $(p \rightarrow q)$

Converse $(q \rightarrow p)$: If you do well on the final, then you completed the review

Inverse $(\approx p \rightarrow \approx q)$: If you did not complete the review, then you will not do well

Contrapositive $(\approx q \rightarrow \approx p)$: If you do not do well, you did not finish the packet

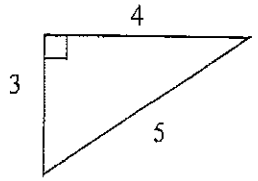
VIII. Name the transversal and lines that form each pair of angles and then classify them. (Alternate interior, alternate exterior, consecutive interior, consecutive exterior, corresponding, vertical, linear pair, or none)



	Transversal	Lines	Classify
1. ∠1 *and* ∠12	a	d, c	alt ext
2. ∠14 *and* ∠15	b or c	X	Vertical
3. ∠4 *and* ∠5	d	a, b	alt int
4. ∠13 *and* ∠6	b	c, d	Cons. int
5. ∠10 *and* ∠16	c	a, b	Cons. ext
6. ∠5 *and* ∠7	d or b	X	linear pair
7. ∠3 *and* ∠11	a	b, c	corresponding
8. ∠13 *and* ∠10	c	a, b	none

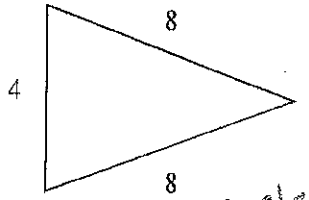
IX. Assume that each triangle is drawn to scale; therefore, angles that look acute are acute. Classify each triangle by its angles (acute, right, obtuse, or equiangular). Classify each triangle by its sides (scalene, isosceles, or equilateral).

1.



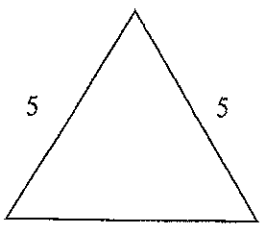
right, scalene

2.



acute, isosceles

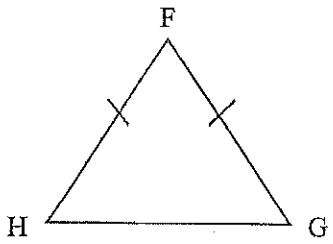
3.



equilateral, equiangular

X. Isosceles Triangles

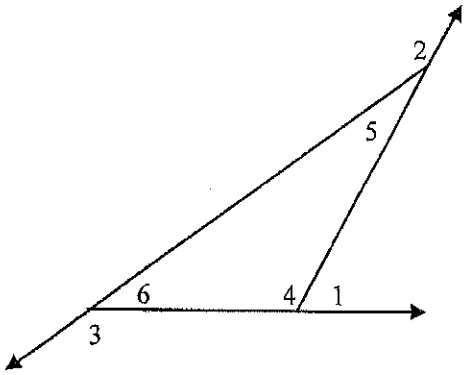
1. Name the base.
2. Name the legs.
3. Name the vertex angle.
4. Name the base angles.



1. $\overline{HG}$
2. $\overline{FH}$, $\overline{FG}$
3. $\angle F$
4. $\angle H$, $\angle G$

XI. Exterior Angles

1. Name the three interior angles.
2. Name the three exterior angles.
3. Name the interior angle that is adjacent to $\angle 2$.
4. Name the two remote interior angles for $\angle 2$.
5. Name the interior angle that is adjacent to $\angle 1$.
6. Name the two remote interior angles for $\angle 1$.
7. $m\angle 4 + m\angle 5 = m\angle$ _____

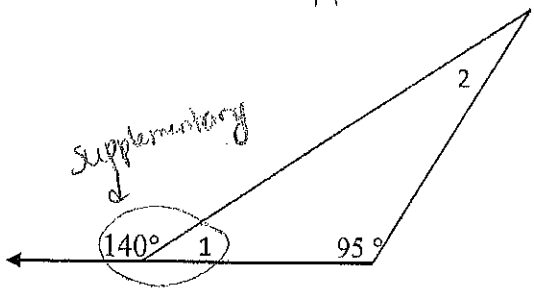


1. 4, 5, 6
2. 1, 2, 3
3. 5
4. 6, 4
5. 4
6. 5, 6
7. 3

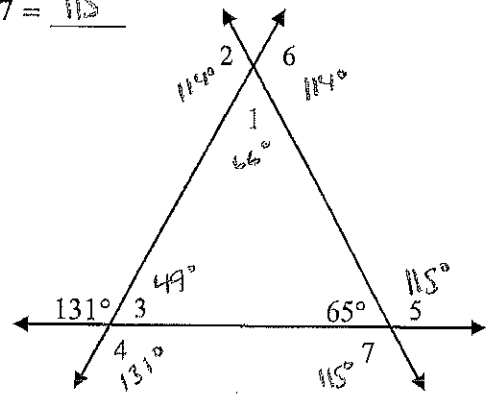
XII. Find each indicated measure.

1. $m\angle 1 =$ 40° $m\angle 2 =$ 55°

140 = 95 + ∠2



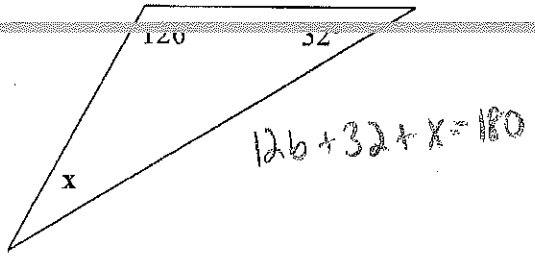
2. $m\angle 1 =$ 66° $m\angle 2 =$ 114° $m\angle 3 =$ 49°
$m\angle 4 =$ 131° $m\angle 5 =$ 115° $m\angle 6 =$ 114°
$m\angle 7 =$ 115°

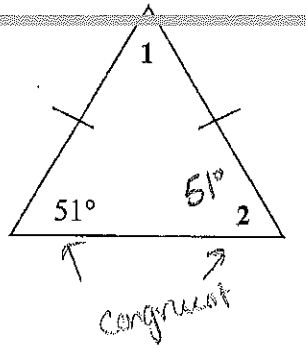


3. x = 22°

4. $m\angle 1 =$ 78° $m\angle 2 =$ 51°

180 - 102



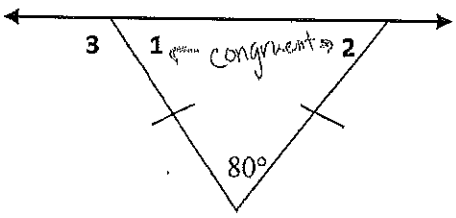


Core Geometry
Final Exam Review #2

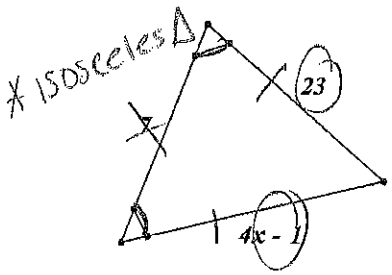
Name _____

Triangles (Chapter 4)

1. $m\angle 1 =$ 50° $m\angle 2 =$ 50° $m\angle 3 =$ 130°

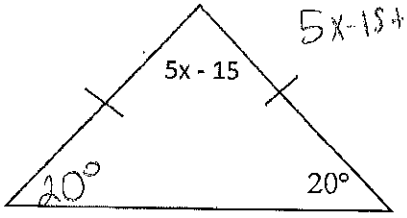


2. x = 6 (You must show your equation.)



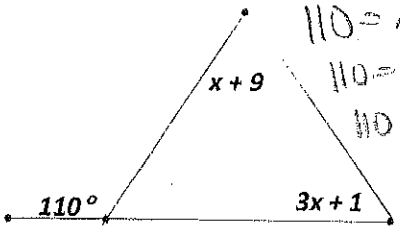
$23 = 4x - 1$
$24 = 4x$
$x = 6$

3. x = 31 (You must show your equation.)



$5x - 15 + 20 + 20 = 180$
$5x = 155$

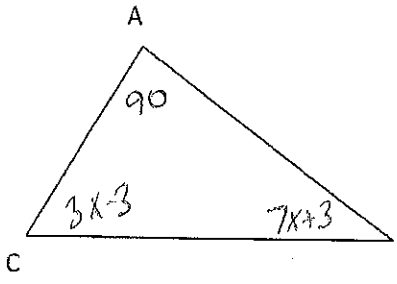
4. x = 25 (You must show your equation.)



$110 = x + 9 + 3x + 1$
$110 = 4x + 10$
$110 = 4x$

5. Label the triangle below with the given expressions. Set up an equation and solve. Once you have found a solution, plug it into each expression to find the degree measure of each angle.

$m\angle B = 7x + 3,\ m\angle C = 3x - 3,\ and\ m\angle A = 90°$



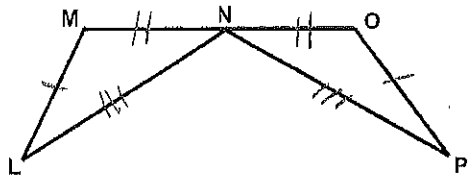
$90 + 3x - 3 + 7x + 3 = 180$
$10x + 90 = 180$
$10x = 90$
$x = 9$

x = 9

$m\angle B =$ 66°

$m\angle C =$ 24°

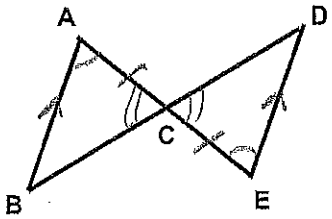
1. $\overline{MN} \cong \overline{NO}$, $\overline{LM} \cong \overline{OP}$, $\overline{LN} \cong \overline{PN}$



Prove: $\triangle LMN \cong \triangle PON$

Statement	Reason
(S) 1. $\overline{MN} \cong \overline{NO}$	1. Given
(S) 2. $\overline{LM} \cong \overline{OP}$	2. Given
(S) 3. $\overline{LN} \cong \overline{PN}$	3. Given
4. $\triangle LMN \cong \triangle PON$	4. SSS

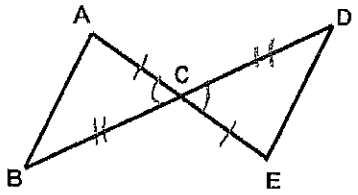
2. Given: $\overline{AB} \parallel \overline{ED}$, $\overline{AC} \cong \overline{EC}$



Prove: $\triangle ABC \cong \triangle EDC$

Statement	Reason
1. $\overline{AB} \parallel \overline{ED}$	1. Given
(A) 2. $\angle A \cong \angle E$	2. Alt int $\angle$s are $\cong$
(A) 3. $\angle ACB \cong \angle ECD$	3. Vertical $\angle$s are $\cong$
(S) 4. $\overline{AC} \cong \overline{EC}$	4. Given
5. $\triangle ABC \cong \triangle EDC$	5. ASA

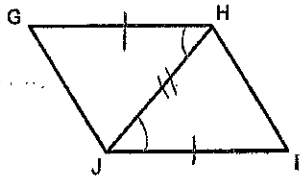
3. Given: $\overline{AC} \cong \overline{CE}$, $\overline{DC} \cong \overline{BC}$



Prove: $\angle B \cong \angle D$

Statement	Reason
(S) 1. $\overline{AC} \cong \overline{CE}$	1. Given
(S) 2. $\overline{DC} \cong \overline{BC}$	2. Given
(A) 3. $\angle ACB \cong \angle ECD$	3. Vertical $\angle$s are $\cong$
4. $\triangle ACB \cong \triangle ECD$	4. SAS
5. $\angle B \cong \angle D$	5. CPCTC

4. Given: $\overline{GH} \cong \overline{JI}$, $\angle GHJ \cong \angle IJH$

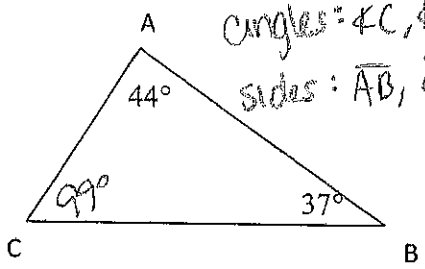


Prove: $\overline{GJ} \cong \overline{HI}$

Statement	Reason
(S) 1. $\overline{GH} \cong \overline{JI}$	1. Given
(A) 2. $\angle GHJ \cong \angle IJH$	2. Given
(S) 3. $\overline{HJ} \cong \overline{HJ}$	3. Reflexive Property
4. $\triangle GHJ \cong \triangle IJH$	4. SAS
5. $\overline{GJ} \cong \overline{HI}$	5. CPCTC

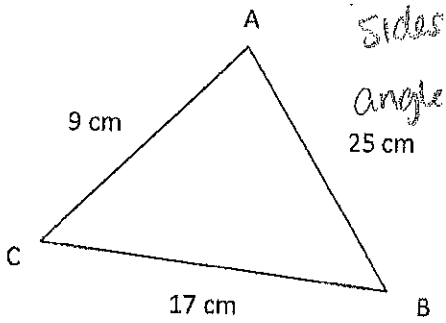
Triangle Inequalities (Chapter 5)

1. List the *sides* of ΔABC in order from *longest to shortest*.



angles: ∠C, ∠A, ∠B
sides: $\overline{AB}$, $\overline{CB}$, $\overline{AC}$

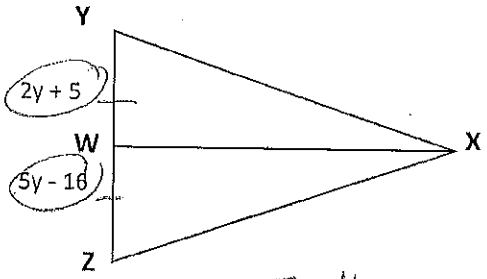
2. List the *angles* of ΔABC in order from *smallest to biggest*.



sides: $\overline{AC}$, $\overline{BC}$, $\overline{AB}$
angles: ∠B, ∠A, ∠C

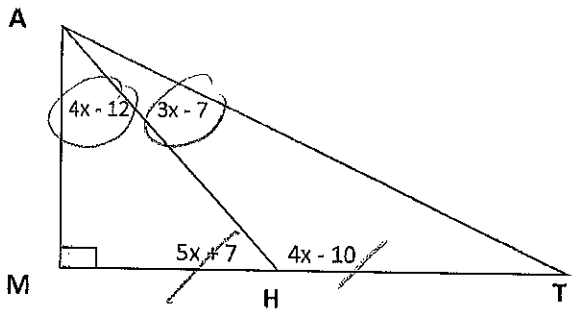
Altitudes, Medians, Angle Bisectors, & Perpendicular Bisectors (Chapter 5)

1. Given: $\overline{XW}$ is a median
   Find: y



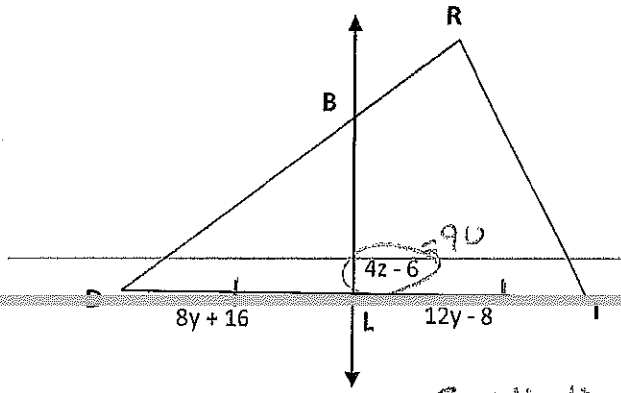
$2y+5=5y-16$
$21=3y$
$y=7$

2. Given: $\overline{AH}$ is an angle bisector
   Find: x



$4x-12=3x-7$
$x=5$

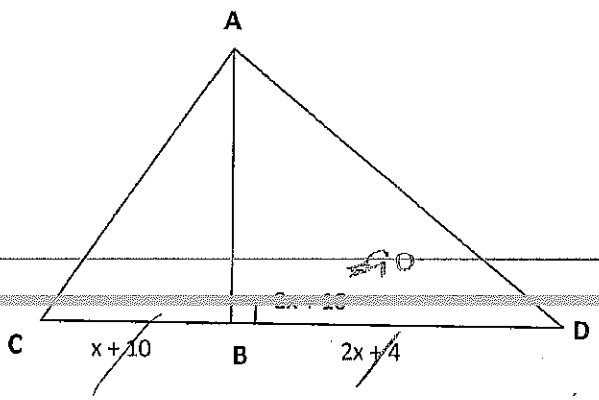
3. Given: $\overleftrightarrow{BL}$ is a perpendicular bisector
   Find: y and z



$4z-6=90$
$4z=96$
$z=24$

$8y+16=12y-8$
$24=4y$
$y=6$

4. Given: $\overline{AB}$ is an altitude
   Find: x



$2x+10=90$
$2x=80$
$x=40$

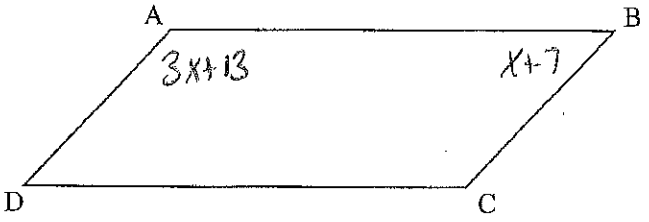
Quadrilaterals (Chapter 6)

1. Find the sum of the measure if the interior angles of each shape.

Hexagon $(6-2)180 = 720°$

Octagon $(8-2)180 = 1080°$

2. ABCD is a parallelogram. If $m\angle B = x+7$ *and* $m\angle A = 3x+13$, find each indicated measure.



$3x+13+x+7=180$

$4x+20=180$

$4x=160$

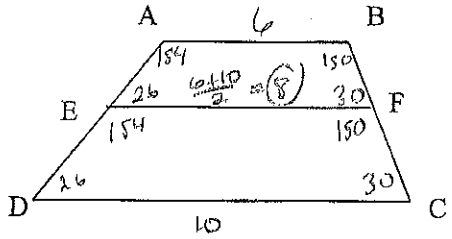
$x=40$

x = 40 $m\angle A = 133°$

$m\angle B = 47°$ $m\angle C = 133°$

$m\angle D = 47°$

3. ABCD is a trapezoid. If $AB=6, DC=10, m\angle B=150°$, *and* $m\angle D=26°$, find each indicated measure.

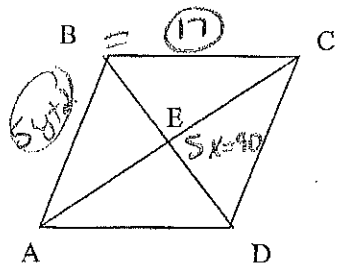


EF = 8 $m\angle BFE = 30°$

$m\angle C = 30°$ $m\angle DEF = 154°$

$m\angle AEF = 26°$ $m\angle A = 154°$

4. ABCD is a rhombus. If $AB=5y+2, BC=17$, *and* $m\angle CED=5x$, find each indicated measure.



$5y+2=17$

$5y=15$

$y=3$

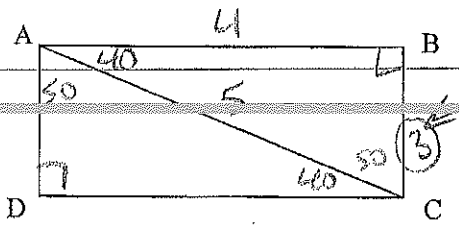
$5x=90$

$x=18$

x = 18

y = 3

5. ABCD is a rectangle. If $AB=4$, $AC=5$, *and* $m\angle BAC=40°$, find each indicated measure.

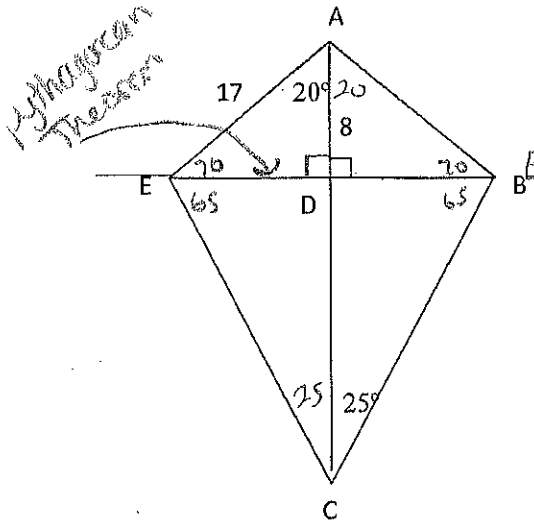


BC = 3 AD = 3

BD = 5 $m\angle D = 90°$

$m\angle ACB = 50°$ $m\angle ACD = 40°$

6. ABCD is a kite. Find each indicated measure.



Pythagorean Theorem

$17^2 = 8^2 + x^2$

$225 = x^2$

$ED = 15 = x$

AB = 17 ED = 15

EB = 30 $m\angle BAD$ = 20°

$m\angle ADE$ = 90° $m\angle ABD$ = 70°

$m\angle DBC$ = 65° $m\angle ECD$ = 25°

Ratios and Proportions (Chapter 7)

1. Solve for x.

$$\frac{x+5}{7} = \frac{x+1}{3}$$

$3(x+5) = 7(x+1)$

$3x+15 = 7x+7$

$8 = 4x$

$x = 2$

2. The ratio of the angles in a triangle are 2:3:4. Find the degree measure of each angle.

$= 180$

$2x + 3x + 4x = 180$

$9x = 180$

$x = 20$

Angle measures: 40° 60° 80°

3. If $\Delta ABC \sim \Delta XYZ$ fill in each missing blank.

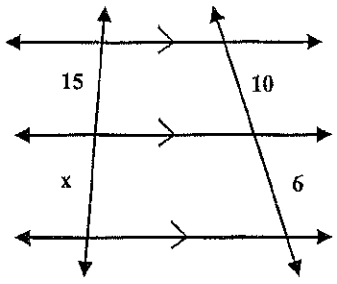
$\frac{AB}{XY} = \frac{BC}{YZ} = \frac{AC}{XZ}$

$\angle A \cong \angle X$

$\angle B \cong \angle Y$

$\angle C \cong \angle Z$

4. Find x.

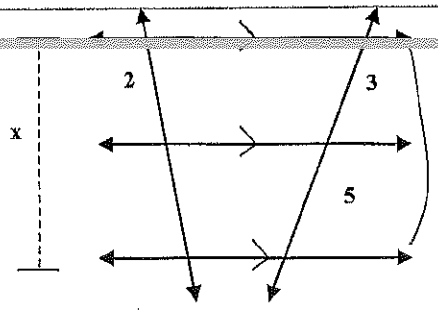


$\frac{15}{x} = \frac{10}{6}$

$90 = 10x$

$x = 9$

5. Find x.



$\frac{2}{x} = \frac{3}{8}$

$16 = 3x$

$x = \frac{16}{3}$

6. A 12 ounce can of soda contains 180 calories. How many ounces could you drink if your diet limits you to 100 calories?

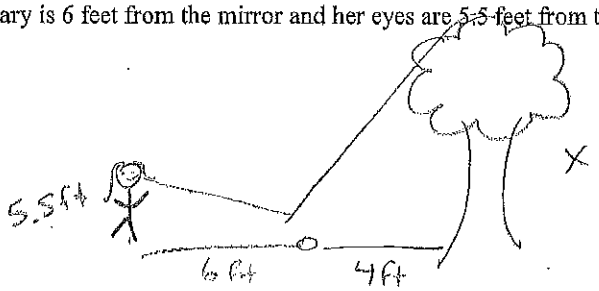
$\frac{12\text{oz}}{180\text{cal}} = \frac{x}{100\text{cal}}$

$12 \cdot 100 = 180x$

$1200 = 180x$

$x = 6.7$ ounces

7. Mary wants to measure the height of a tree. She sees the top of a tree in a mirror on the ground that is 4 feet from the tree. How tall is the tree if Mary is 6 feet from the mirror and her eyes are ~~5.5 feet~~ from the ground? (Please draw a picture, set up a proportion, and solve.)



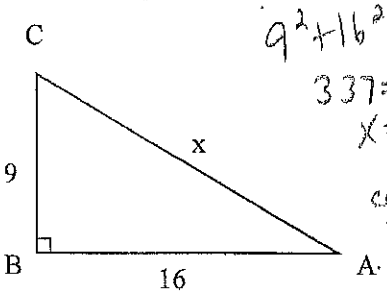
$\frac{5.5}{x} = \frac{6}{4}$

$X = 3.7$ feet

Special Right Triangles (Chapter 8)

Find each indicated measure.

1. x = $\sqrt{337}$



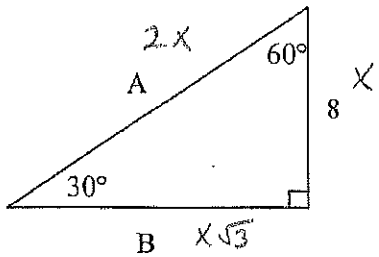
$9^2+16^2=x^2$

$337=x^2$

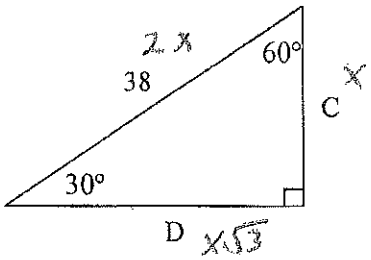
$x=\sqrt{337}$

Can be simplified

2. A = 16 B = $8\sqrt{3}$

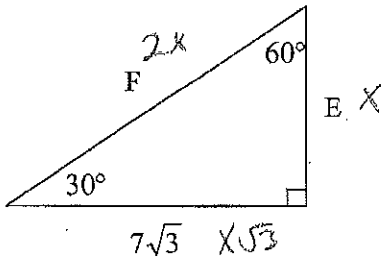


3. C = 19 D = $19\sqrt{3}$

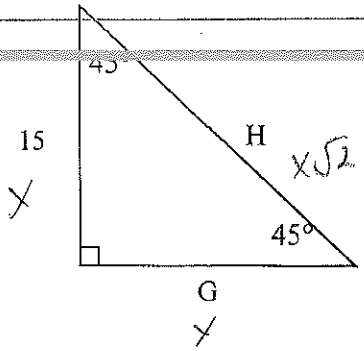


$X = 19$

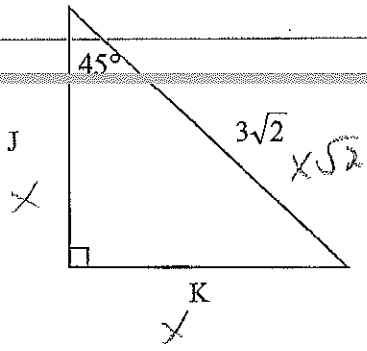
4. E = 7 F = 14



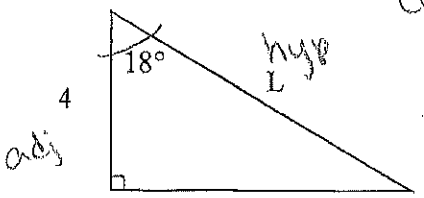
5. G = 15 H = $15\sqrt{2}$



6. J = 3 K = 3



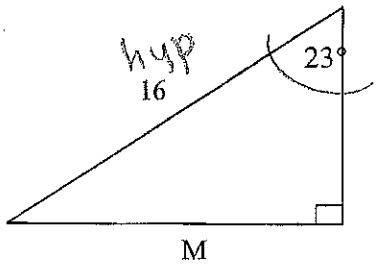
7. L = 4.21



$\cos 18 = \frac{4}{L}$

$L = \frac{4}{\cos 18}$

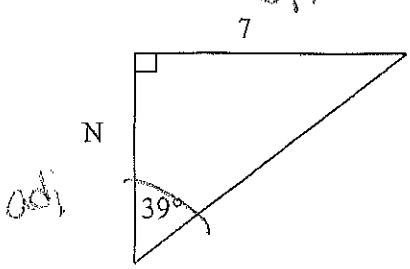
8. M = 6.25



$\sin 23 = \frac{m}{16}$

$16 \sin 23 = m$

9. N = 8.64

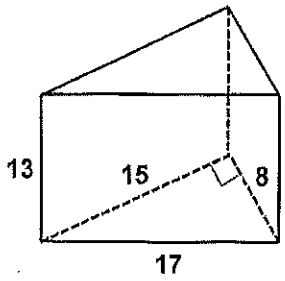


$\tan 39 = \frac{7}{N}$

$N = \frac{7}{\tan 39}$

Surface area and Volume (ch 11-13)

1.



$LA = (15+17+8)13$

$base = \frac{1}{2} \cdot 15 \cdot 8 = 60$

$SA = 520 + 2(60)$

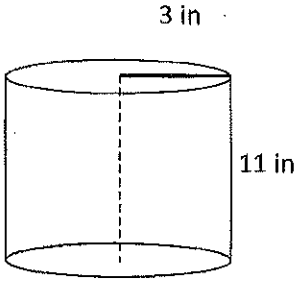
$Volume = 60 \cdot 13$

Lateral Area: 520 units^2

Surface Area: 640 units^2

Volume: 780 units^3

2.



$LA = 6\pi \cdot 11 = 66\pi$ or $207.3\ in^2$

$base = \pi \cdot 3^2 = 9\pi$ or $28.3\ in^2$

$SA = 66\pi + 2(9\pi)$

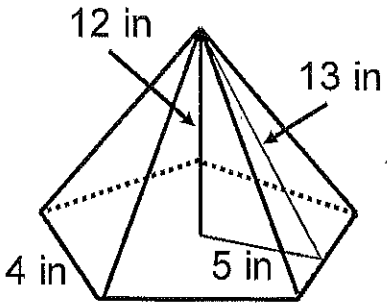
$Volume = 9\pi \cdot 11$

Lateral Area: 66π or $207.3\ in^2$

Surface Area: 84π or $263.9\ in^2$

Volume: 99π or $311.\ in^3$

3.



$LA = \frac{1}{2}(4.5) \cdot 13$

$base = \frac{1}{2} \cdot 5 \cdot (4.5) = 50$

$SA = 86.7 + 50$

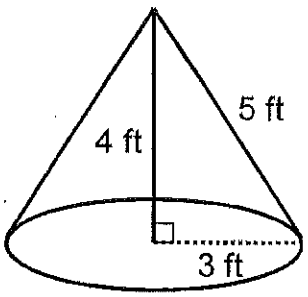
$Volume = \frac{1}{3} \cdot 50 \cdot 12$

Lateral Area: $130\ in^2$

Surface Area: $180\ in^2$

Volume: $200\ in^3$

4.



$LA = \frac{1}{2} \cdot 6\pi \cdot 5 = 15\pi$

$base = \pi \cdot 3^2 = 9\pi$

$SA = 15\pi + 9\pi$

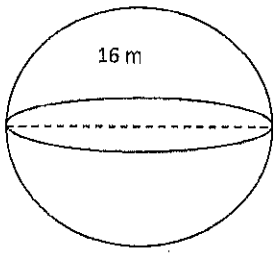
$Volume = \frac{1}{3} \cdot 9\pi \cdot 4$

Lateral Area: 15π or $47.1\ ft^2$

Surface Area: 24π or $75.4\ ft^2$

Volume: 12π or $37.7\ ft^3$

5.



$SA = 4\pi r^2$

$= 4\pi \cdot 8^2$

$V = \frac{4}{3}\pi \cdot 8^3$

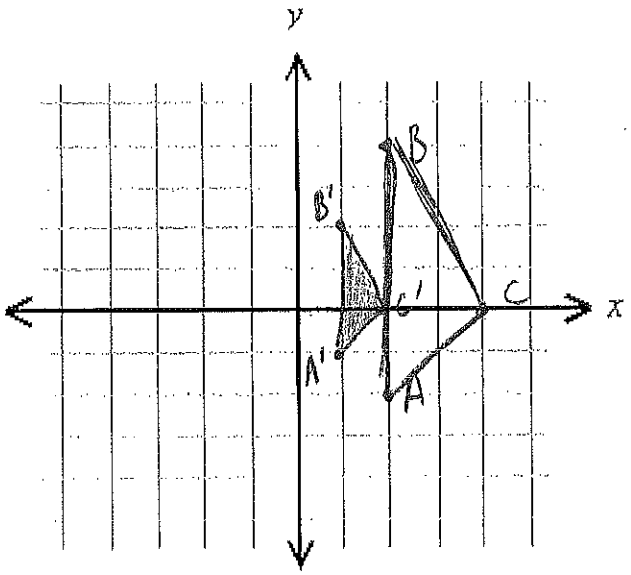
Surface Area: 256π or $804.2\ m^2$

Volume: $2144.7\ m^3$

Transformations

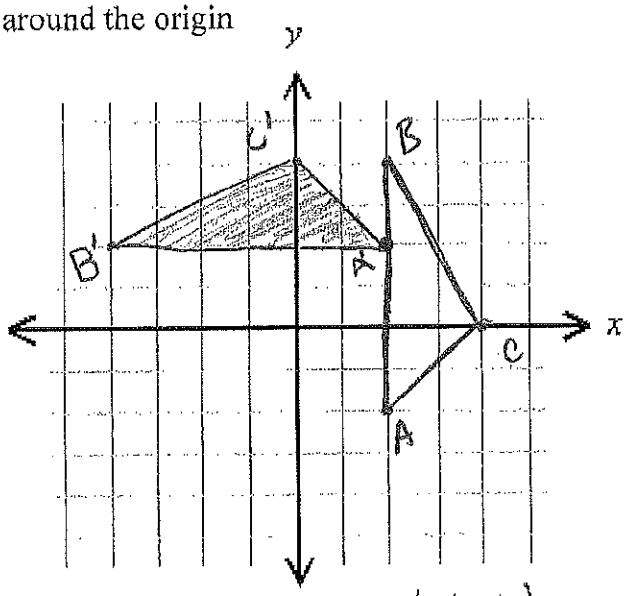
Find the coordinates and draw triangle ABC with vertices A(2, -2), B(2, 4), C(4, 0) after each transformation.

Dilated by a scale factor of ½



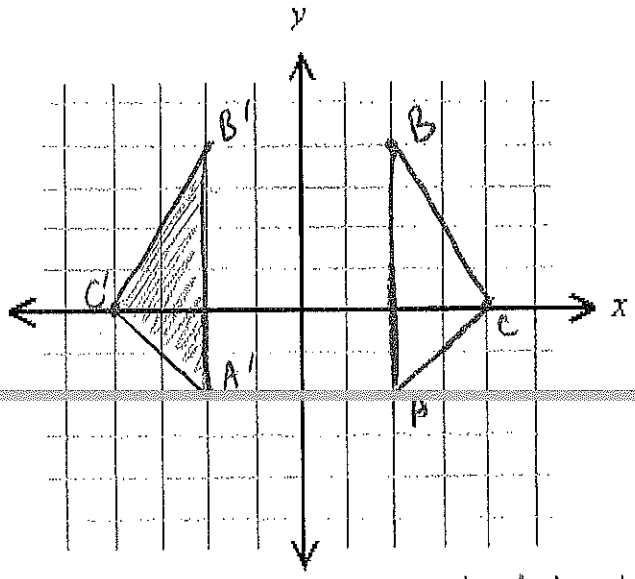
A'=(1,-1) B'=(1,2) C'=(2,0)

Rotated 90° counterclockwise around the origin



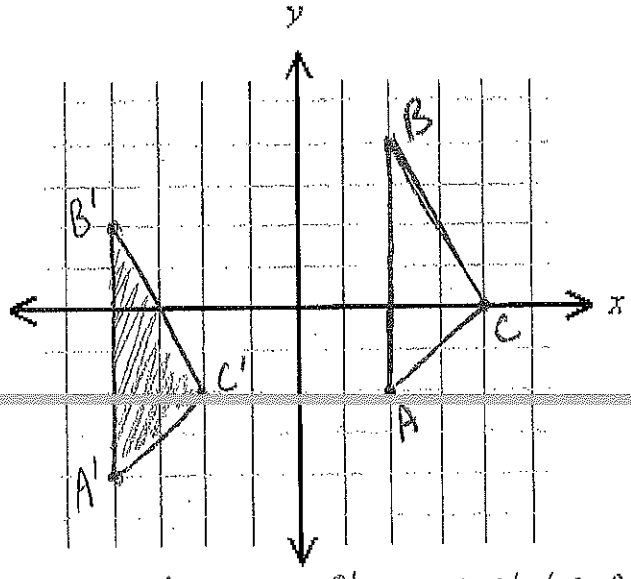
A'=(2,2) B'=(-4,2) C'=(0,4)

Reflected across the y-axis



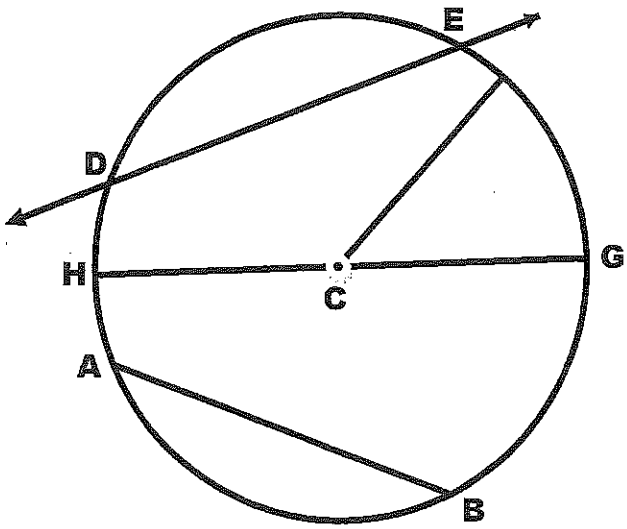
A'=(-2,-2) B'=(-2,4) C'=(-4,0)

Translated to the left 6 and down 2



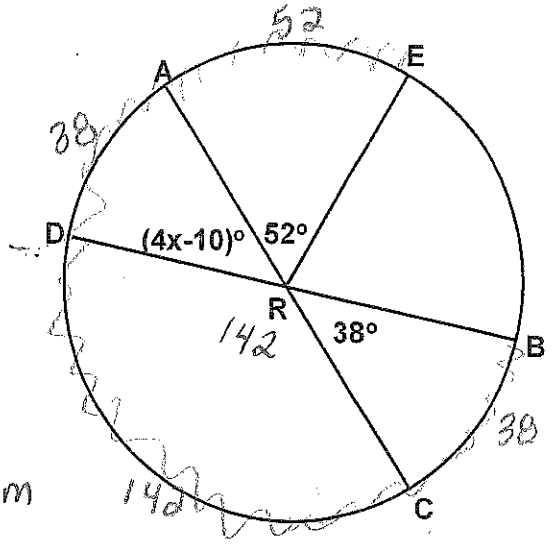
A'=(-4,-4) B'=(-4,2) C'=(-2,-2)

Use the figure to the right for each of the following questions below.



1. Name the circle. ⊙C
2. Name two radii. $\overline{CG}$, $\overline{CH}$
3. Name two chords $\overline{DE}$, $\overline{AB}$
4. Name the diameter. $\overline{HG}$
5. Name a minor arc. $\overset{\frown}{GB}$
6. Name a semicircle. $\overset{\frown}{HBG}$
7. Name a major arc. $\overset{\frown}{HBE}$

8. In circle R $\overline{AC}$ and $\overline{BD}$ and diameters. Find each measure.



   a. Solve for x. $4x-10=38$
   $4x=48$
   $x=12$

   b. $m\angle DRC = 142°$

   c. $m\overset{\frown}{DCB} = 180°$

   d. $m\overset{\frown}{EAB} = 270°$

   e. The diameter is 16 meters long. Find the length for $\overset{\frown}{DRC}$.
   $\left(\frac{\text{Central } \angle}{360}\right)\pi \cdot d \quad \left(\frac{142}{360}\right)\pi(16) = 19.8\text{ m}$

   f. Find the area of sector ARD
   $\left(\frac{\text{Central } \angle}{360}\right)\pi r^2 \quad \left(\frac{38}{360}\right)\pi 8^2 = 21.2\text{ m}^2$

9. Solve for the missing variable in each circle.