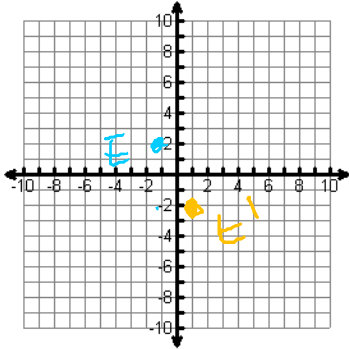# GEOMETRY MIDTERM REVIEW- STUDY GUIDE
UNIT 1, 2 AND 3A

Unit 1... Transformations:
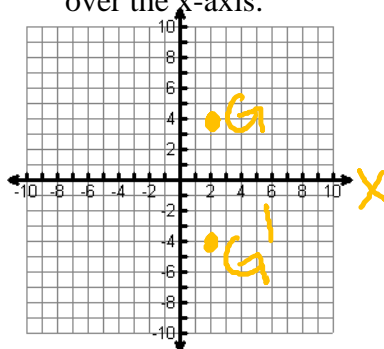
For #1-3, use the graphs below if needed:

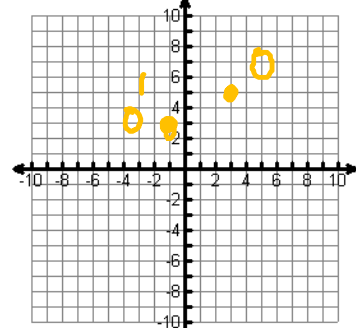1. Rotate the point E(-1, 2) 180°

2. Reflect point G(2, 4) over the x-axis.

3. Translate the point O(3, 5) by the vector <-4, -2>   Left 4   ↓ 2

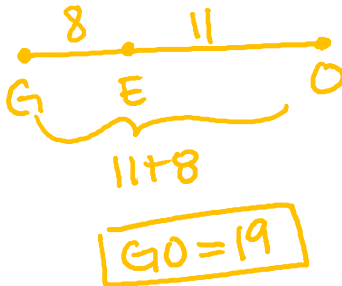E' (__1__ , __-2__)   G' (__2__ , __-4__)   O' (__-1__ , __3__)

Go back to old study guides, notes, homework, Unit 1 Review WS (handed out on Friday) to study more!

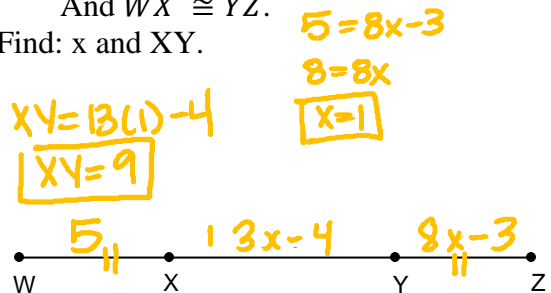## Unit 2 review:

1) E is between G and O. GE = 8 and EO = 11.
   Find the length of GO.

$$8 \quad \quad 11$$

G ⌣ E ⌣ O

11+8

$$\boxed{GO = 19}$$

2) Given: WX = 5, XY = 13x – 4, YZ = 8x – 3
   And $\overline{WX} \cong \overline{YZ}$.
   Find: x and XY.

$$5 = 8x - 3$$
$$8 = 8x$$
$$\boxed{x = 1}$$

$$XY = 13(1) - 4$$
$$\boxed{XY = 9}$$

$$5 \quad \quad 13x-4 \quad \quad 8x-3$$
W — — — X — — — Y — — — Z

3) If m∠1 = 5x + 32 and m∠3 = 3x + 64 find x.

VA's ≅

$$3x + 64 = 5x + 32$$
$$32 = 2x$$
$$\boxed{x = 16}$$

3x+64 ∠3   ∠4   ∠1 5x+32   ∠2
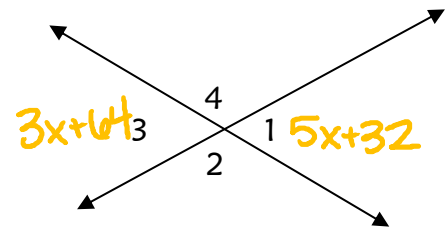
*Angles 1 and 3 are **vertical ∠s** angles and are **≅**.*

*Angles 1 and 4 are **Linear Pair** angles and are **supp**.*

Make sure to go back and review angle bisector, interior, vocabulary (coplanar, skew, perpendicular, parallel, collinear, non-collinear, etc).

Unit 2 Vocab review: When we KNOW two lines are parallel, we can set up equations using ANY of the angle pair relationships such that....

- ❏ Corresponding Angles are _____ $\cong$ _____
- ❏ Alternate Interior Angles are _____ $\cong$ _____
- ❏ Alternate Exterior Angles are _____ $\cong$ _____
- ❏ Same Side Interior Angles are __Supp__
- ❏ Same Side Exterior Angles are __Supp__

For #4-5, use the diagram below:

4) Find the measures of the angles.
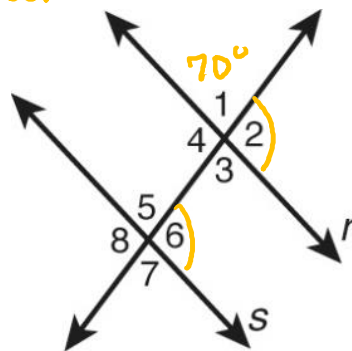   Given: $s \parallel r$,

   $m\angle 2 = (10x + 4)^o$ $\Big]$ ≅ b/c corr ∠s
   $m\angle 6 = (8x + 28)^o$

   $10x + 4 = 8x + 28$

   $2x = 24$

   $\boxed{X = 12}$

5) Given: $s \parallel r$ and m $\angle 1 = 70°$
   Find.... m $\angle 5$, m $\angle 7$, and m $\angle 2$.

   ∠1 = ∠5
   m∠5 = 70°
   ∠1 = ∠7
   m∠7 = 70°
   ∠1 & ∠2 are Supp
   m∠2 = 180 - 70
   $\boxed{m\angle 2 = 110}$

(diagram: two lines crossing through parallel lines r and s, 70° marked, angles 1, 2, 3, 4, 5, 6, 7, 8)

6) Find the slope given the points
   (-3, -6) and (12, -1)

   $m = \dfrac{-6 - 1}{-3 - 12} = \dfrac{-5}{-15} = \dfrac{1}{3}$

   $\boxed{m = \frac{1}{3}}$

7) Write an equation of the line that goes through (12, -4) and slope = 1/2. m

   $y + 4 = \frac{1}{2}(x - 12)$ ← pt. slope
   $y + 4 = \frac{1}{2}x - 6$
   $y = \frac{1}{2}x - 10$ ← S.Int.

8) Write an equation of a line in slope-intercept y=mx+b
   form that passes through the points (-1,8) and (4, -2).

   ① $m = \dfrac{8 - 2}{-1 - 4} = \dfrac{10}{-5} = -2$

   ② $y - 8 = -2(x + 1)$
   $y - 8 = -2x - 2$
   $\boxed{y = -2x + 6}$

9) Write an equation of a line in point-slope form that passes through the points (-5, 9) and (0, -6).

   ① $m = \dfrac{9 - -6}{-5 - 0} = \dfrac{15}{-5} = -3$

   ② $y - 9 = -3(x + 5)$
   or
   $y + 6 = -3(x + 0)$

10) Write an equation of a line in slope-intercept y=mx+b
    form that is parallel to the line y=-2x+4 and
    passes through the point (3, 5).

    same slope... m = -2
    $y - 5 = -2(x - 3)$
    $y - 5 = -2x + 6$
    $\boxed{y = -2x + 11}$

11) Are the lines parallel, perpendicular, or neither? (Hint: Rewrite in y=mx+b)
    5x – 4y = 10 and 5y = -4x – 6.

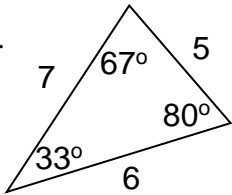 $-4y = -5x + 10$ $\frac{5}{5}$ $\frac{5}{5}$ $\frac{5}{5}$
    $y = \frac{5}{4}x - \frac{5}{2}$ $y = \frac{-4}{5}x - 6/5$

    opp recips... ⊥ lines

Unit 3a - Triangles
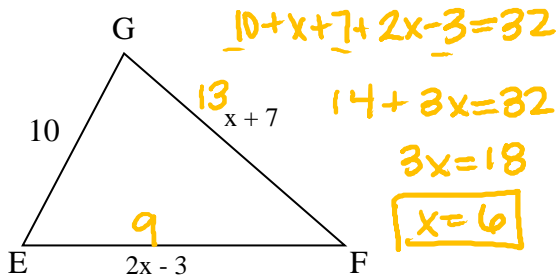
1) Classify each triangle by its ANGLES and SIDES.

Triangle with angles 67°, 80°, 33° and sides 7, 5, 6

__acute__
__scalene__

Triangle with angles 33°, 57° and sides 5, 3, 4 (right angle mark)

__Right__
__scalene__

Triangle with angle 106°, and base angles 36°, 36°
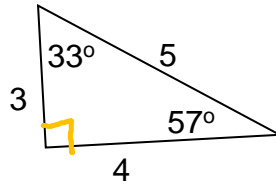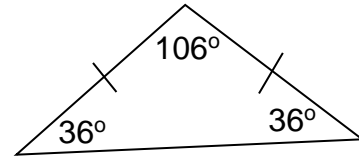
__obtuse__
__isosceles__

2) If the perimeter of ΔEFG is 32, is ΔEFG scalene, isosceles, or equilateral?

Triangle EFG: G top, sides 13, x+7, 10, 9, and base 2x-3

$10+x+7+2x-3=32$
$14+3x=32$
$3x=18$
$\boxed{x=6}$

(circled) scalene

3) Given: $\angle T = (2x + 6)°$
$\angle RSU = (4x + 16)°$
$\angle R = (x + 48)°$

Find: x and m∠T

Diagram: R at top, angles x+48, 2x+6 at T, 4x+16 at S, line to U

$x+48+2x+6=4x+16$
$3x+54=4x+16$
$\boxed{38=x}$
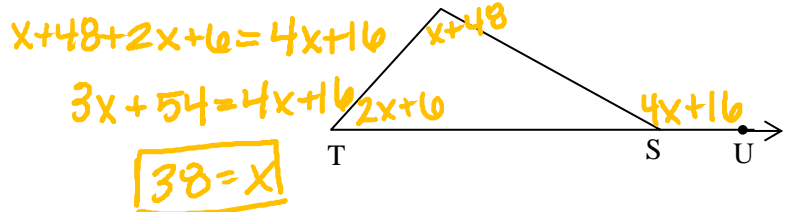
$m\angle T = 2(38)+6$
$\boxed{m\angle T = 82°}$

4) Given: ΔABC is isosceles with base CB. → ∠3≅∠2
$m\angle 1 = (11x)°$
$m\angle 3 = 2x$

Find: x, m∠1 and m∠2

Diagram: A top, angle 1 = 11x, angle 3 = 2x at C, angle 2 = 2x at B

$11x+2x+2x=180$
$15x=180$
$\boxed{x=12}$

$m\angle 1 = 11(12)$
$\boxed{m\angle 1 = 132°}$ $\boxed{m\angle 2 = 24°}$

=180
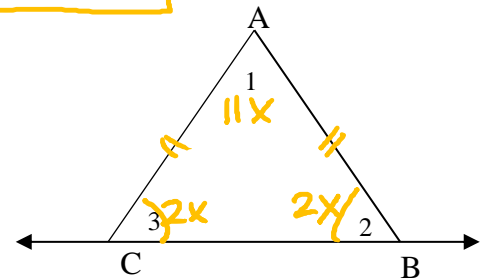
5) Two angles ∠7 and ∠8 are (circled) complementary.
If $m\angle 7 = 54°$, what is the $m\angle 8$?

$\begin{array}{r} 90 \\ -54 \\ \hline \end{array}$
(circled) 36°

6) Two angles are (circled) supplementary.
One angle is twice the measure of the other.
Find the measure of the larger angle.

x   2x
$x+2x=180$ $2(60)=\boxed{120°}$
$3x=180$
$x=60$
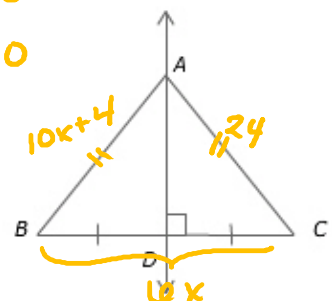
7) Given $\overline{AD}$ is the perpendicular bisector of $\overline{BC}$,
AB=10x + 4, AC=24, and BC = 6x, find x and DC.

$10x+4=24$
$10x=20$ $\boxed{x=2}$

$DC=6(2)$ $\boxed{DC=6}$
$=12\div2=6$

Diagram: triangle with A top, 10x+4, 24 sides, B and C at base, D at bottom with 6x

Now go back to old notes, homework, and study guides and study, study, study!!!