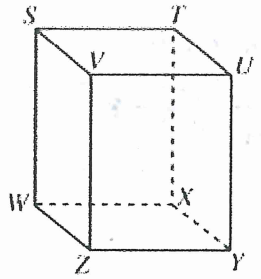
Geometry
Semester 1 Review 2015

Name Answer Key!
Hour

Use the figure to answer #1-4:



1. Name a pair of parallel lines.

   $\overleftrightarrow{ST}$ and $\overleftrightarrow{VU}$

2. Name all the lines perpendicular to $\overline{XY}$.

   $\overleftrightarrow{ZY}$, $\overleftrightarrow{WX}$, $\overleftrightarrow{VY}$, $\overleftrightarrow{TX}$

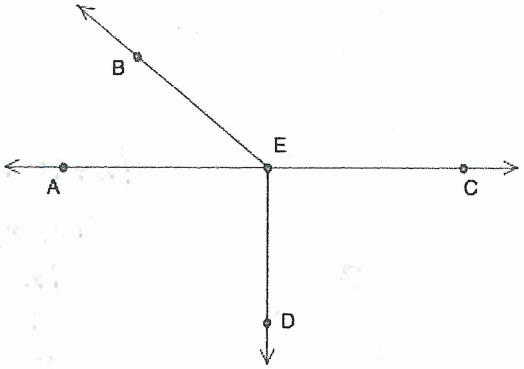
3. Name a line that is skew to $\overline{SW}$.

   $\overleftrightarrow{VU}$

4. What is the intersection of plane *ZYV* and plane *ZWS*?

   $\overline{ZV}$

Use the figure to answer #5-6:



5. What ray is opposite $\overrightarrow{EC}$?

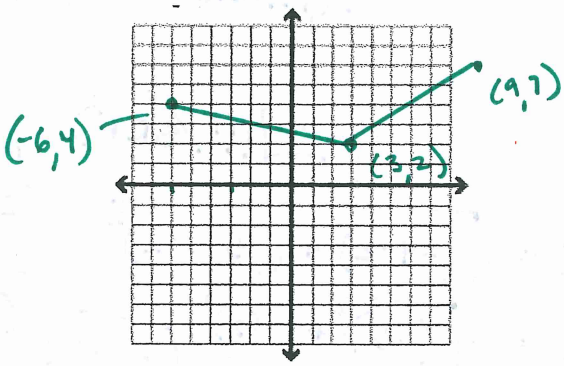
   $\overrightarrow{EA}$

6. Name a pair of supplementary angles.

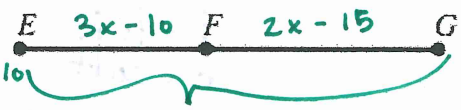
   ∠AEB and ∠BEC

7. Graph the points and state whether they are collinear or not.
   (-6, 4), (3, 2), (9, 7)

   Definitely not collinear...



8. If $EF = 3x - 10$, $FG = 2x - 15$ and $EG = 20$, find the value of x. Then find *EF* and *FG*.

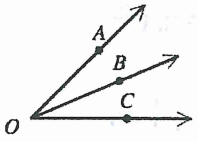


$\overline{EF} = 3(9) - 10$
$= 27 - 10$
$\overline{EF} =$ 17 units

$\overline{FG} = 2(9) - 15$
$\overline{FG} = 18 - 15$
$\overline{FG} =$ 3 units

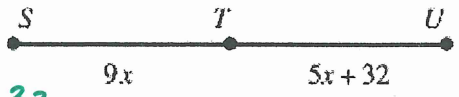
$3x - 10 + 2x - 15 = 20$ (seg. Add. Post.)
$5x - 25 = 20$
$+25 \quad +25$
$\frac{5x}{5} = \frac{45}{5}$
$x = 9$

9. If $m\angle BOC = 23°$ and $m\angle AOC = 45°$, then what is the measure of $m\angle AOB$?



$m\angle BOC + m\angle AOB = m\angle AOC$
$23° + m\angle AOB = 45°$
$m\angle AOB = 45° - 23°$
$m\angle AOB = 22°$

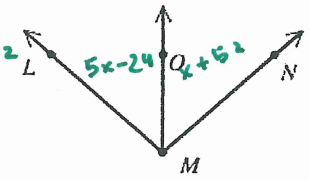
10. If $\overline{ST} \cong \overline{TU}$, find the value of x. Then find ST.



$9x = 5x + 32$
$-5x \quad -5x$
$\frac{4x}{4} = \frac{32}{4}$
$x = 8$

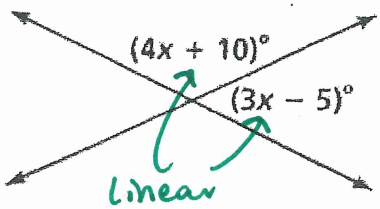
$\overline{ST} = 9(8) = 72$ units

11. MO bisects $\angle LMN$. ($\angle LMO \cong \angle OMN$)
$m\angle LMO = 5x - 24$, $m\angle NMO = x + 52$.
Solve for x.



$5x - 24 = x + 52$
$-x \quad -x$
$4x - 24 = 52$
$+24 \quad +24$
$\frac{4x}{4} = \frac{76}{4}$
$x = 19$

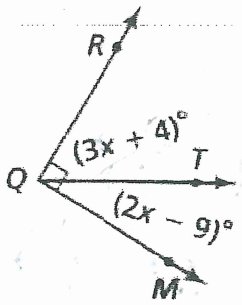
12. Find the value of x.



Linear Pairs are Supplementary

$4x + 10 + 3x - 5 = 180°$
$7x + 5 = 180$
$-5 \quad -5$
$\frac{7x}{7} = \frac{175}{7}$
$x = 25$

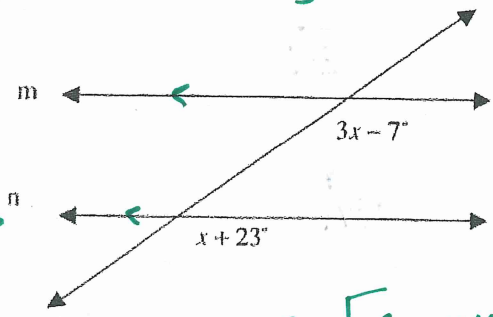
13. Find the measure of $\angle TQM$.



$(3x + 4) + (2x - 9) = 90°$
$5x - 5 = 90°$
$+5 \quad +5$
$\frac{5x}{5} = \frac{95}{5}$
$x = 19$

$m\angle TQM = 2(19) - 9 = 38 - 9 = 29°$

14. Find x. Assuming m||n ...



$3x - 7 = x + 23$
$-x \quad -x$
$2x - 7 = 23$
$+7 \quad +7$
$\frac{2x}{2} = \frac{30}{2}$
$x = 15$

[Corresponding ∠'s ≅ Thm]

Find the distance between the points. Then find the midpoint between the points. Leave in simplest radical form. !!! ... (SRF)

15. (2, -2) and (-4, 3)

$d = \sqrt{(-4-2)^2 + (3--2)^2}$
$d = \sqrt{(-6)^2 + (5)^2}$
$d = \sqrt{36 + 25} = \sqrt{61}$ SRF

MP $\left(\frac{2+-4}{2}, \frac{-2+3}{2}\right)$
$\left(-1, \frac{1}{2}\right)$ MP

16. (-2, -5) and (-1, 3)

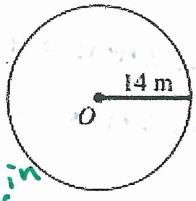
$d = \sqrt{(-1--2)^2 + (3--5)^2}$
$d = \sqrt{(1)^2 + (8)^2}$
$d = \sqrt{1 + 64} = \sqrt{65}$ SRF

MP $= \left(\frac{-1+-2}{2}, \frac{3+-5}{2}\right) = \left(-\frac{3}{2}, -1\right)$ MP

$C = \pi d = 2\pi r \quad A = \pi r^2$

Find the circumference and area of the following circles:

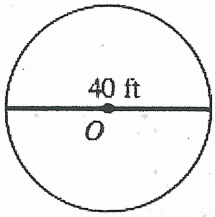
17.



$r = 14$ m
$C = 2\pi(14\text{m})$
$C = 28\pi$ m (87.92m)
$A = \pi(14\text{m})^2$
$A = 196\pi\ m^2$ ($615.44\ m^2$)

Leave answers in terms of π!

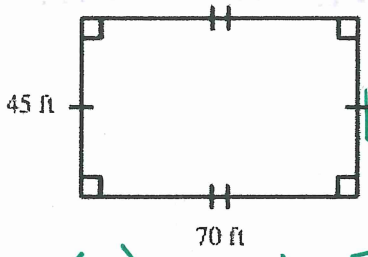
18.



$d = 40$ ft
$r = 20$ ft
$C = \pi\, 40$ ft
$C = 40\pi$ ft (125.6 ft)
$A = \pi(20\text{ft})^2$
$A = 400\pi\ ft^2$ ($1256\ ft^2$)

Find the perimeter and area of the following figures:

19.

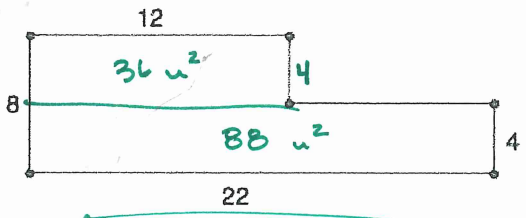


$A = 45 \cdot 70$

$A = 3150 ft^2$

$P = 2(45) + 2(70) = 90 + 140 = 230 ft$

20.

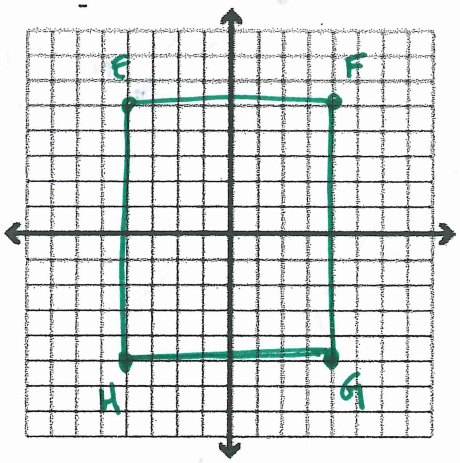


$P = 50$ units

$A = 124$ units²

21. Draw quadrilateral *EFGH* in the coordinate plane. Find its perimeter and area.

E (-4, 5)
F (4, 5)
G (4, -5)
H (-4, -5)



$\overline{EF} = 8$ units

$\overline{FG} = 10$ units

$\overline{GH} = 8$ units

$\overline{HE} = 10$ units

$P = 16 + 20 = 36$ units

$A = 8 \cdot 10 = 80$ units²

Identify the hypothesis and conclusion of the conditional statements. Then write the converse.

22. If yesterday was Wednesday, then tomorrow is Friday.

Hyp. Con.

If tomorrow is Friday, then yesterday was Wednesday.

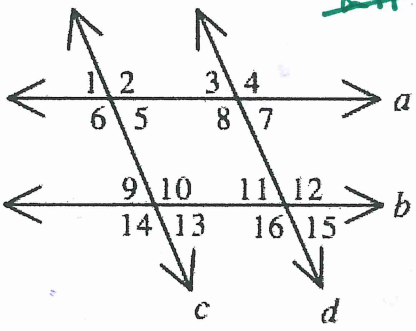
23. If it is a dime, then it is a coin.

Hyp. Con.

If it is a coin, then it is a dime.

Use the figure to answer #24-27.

Assuming all



24. What is the relationship between ∠2 *and* ∠6?

Vertical ∠'s

25. Name the angle that is corresponding to ∠2.

∠10 and ∠4

26. What is the relationship between ∠7 *and* ∠11?

Alternate Interior ∠'s

27. Name the angle that is same-side interior to ∠8.

∠11

28. How many sides in each of the following figures?

a. triangle b. pentagon c. hexagon d. quadrilateral

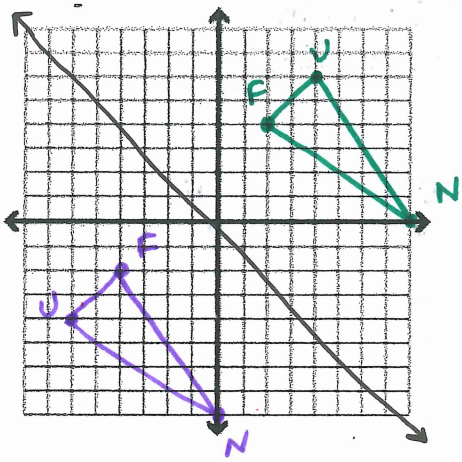
3 △ 5 ⬠ 6 ⬡ 4 □

29. On a separate sheet of paper, **construct**, using a compass and protractor, the following figures:
   a. A pair of congruent angles.
   b. An equilateral triangle.
   c. A set of parallel lines.
   d. A set of perpendicular lines.
   e. A reflection of △ ABC in a line l.

Find in textbook or notes.

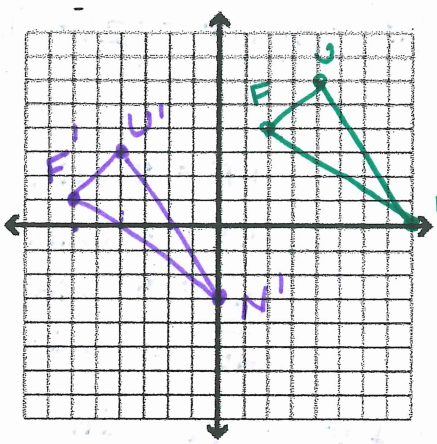
For problems #30-32, graph △ FUN with vertices $F(2, 4)$, $U(4, 6)$, $N(8, 0)$.

30. Reflect △ FUN over the line y = -x.



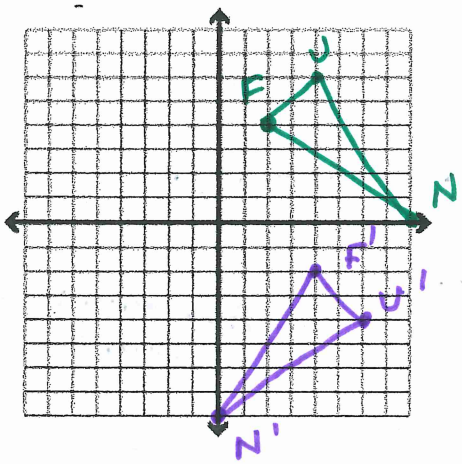
F'(-4,-2)
U'(-6,-4)
N'(0,-8)

31. Translate △ FUN along the vector <-8, -3>.



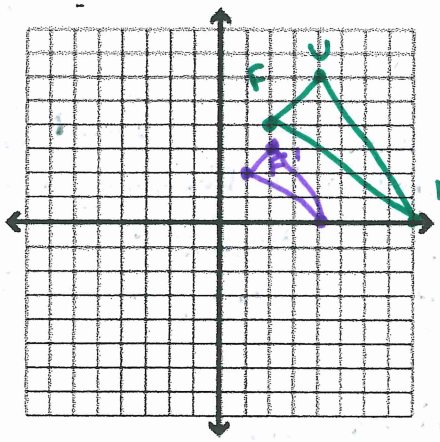
F'(-6,1)
U'(-4,3)
N'(0,-3)

32. Rotate △ FUN 270° counterclockwise.



F'(4,-2)
U'(6,-4)
N'(0,-8)

33. Dilate △ FUN by a scale factor $k = \frac{1}{2}$



F'(1,2)
U'(2,3)
N'(4,0)

34. Simplify each radical.

a. $\sqrt{50}$

$\sqrt{25}\cdot\sqrt{2}$

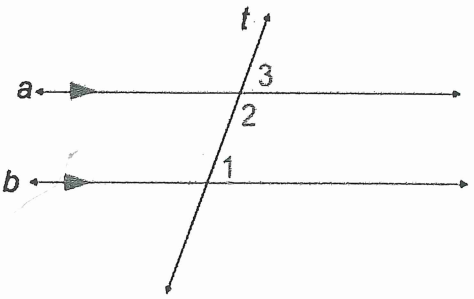
$5\sqrt{2}$

b. $3\sqrt{3} - \sqrt{3}$

$2\sqrt{3}$

c. $\sqrt{\frac{9}{5}} = \frac{\sqrt{9}}{\sqrt{5}} = \frac{3}{\sqrt{5}}$

$\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$



35. Complete the proof.

Given: $a \parallel b$

Prove: $\angle 1$ *and* $\angle 2$ are supplementary

Statement	Reason
1. $a \parallel b$	a. Given
2. $\angle 1 \cong \angle 3$	b. Corresponding ∠'s ≅ Thm
3. $m\angle 1 = m\angle 3$	c. Def^n of ≅ ∠'s
4. $\angle 2$ *and* $\angle 3$ are supplementary	d. Linear Pair Postulate
5. $m\angle 2 + m\angle 3 = 180°$	e. Def^n of Supplementary ∠'s
6. $m\angle 2 + m\angle 1 = 180°$	f. "
7. $\angle 1$ *and* $\angle 2$ are supplementary	g. Transitive Prop of Supplementary ∠'s (Two ∠'s supplementary is/same ∠ have to be ≅)

36. Given an endpoint *(2, 3)* and the midpoint *(-1, 6)* of the line segment, find the missing endpoint.

(2,3) (-1,6) (?,?) → (x, y)

$$\left(\frac{2+x}{2}, \frac{3+y}{2}\right) = (-1, 6)$$

$$2 \cdot \frac{2+x}{2} = -1 \cdot 2 \qquad 2 \cdot \frac{3+y}{2} = 6 \cdot 2$$

$$2 + x = -2 \qquad 3 + y = 12$$

$$-2 \quad -2 \qquad -3 \quad -3$$

$$x = -4 \qquad y = 9$$

$$(-4, 9)$$