FINAL EXAM REVIEW

December _____

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

1)
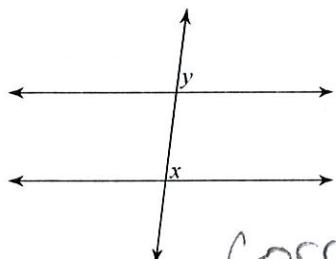
Corresponding angles

2)
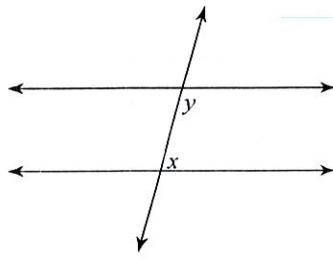
consecut
interior
or
same-s
interi__

3) Find x if $m\angle FQR = 10x - 5$,
$m\angle PQR = -6 + 31x$, and $m\angle PQF = 125°$.
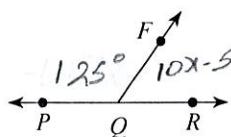
$125°$ / $10x-5$

$m\angle PQR = m\angle PQF + m\angle FQR$
$-6 + 31x = 125 + 10x - 5$
$\underline{-10x}$ $\underline{-10x}$
$-6 + 21x = 120 \longrightarrow 21x = 126$

$\boxed{X = 6}$

4)

$m\angle JEF = m\angle F$
$17x - 6 = 4x + 1$
$17x - 6 = 4x +$
    $+6$
$17x = 4x +$
$\underline{-4x}$ $\underline{-4x}$
$13x = 104$
$\boxed{X = 8}$

5)

$(3x + 3)°$
$(4x + 3)°$
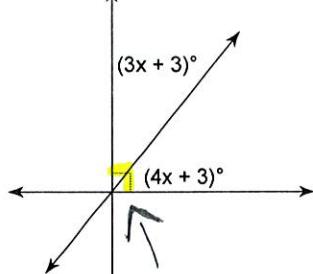
Complementary angles

$3x + 3 + 4x + 3 = 90$
$7x + 6 = 90$
$\underline{-6}$ $\underline{-6}$
$7x = 84$
$\boxed{X = 12}$

Find the value of x.

6)
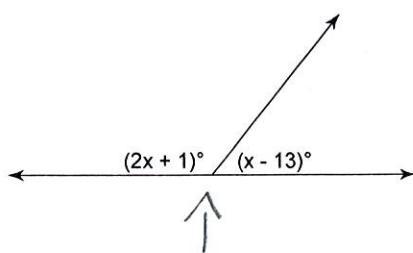
$(2x + 1)°$ / $(x - 13)°$

linear pairs are supplementary.

$2x + 1 + x - 13 = 180$
$3x - 12 = 180$
$\underline{+12}$ $\underline{+12}$
$3x = 192$
$\boxed{X = 64}$

7)

$(2x + 1)°$ $77°$

$2x + 1 = 77$

$\underline{-1 \quad\quad -1}$

$2x = 76$

$\boxed{x = 38}$
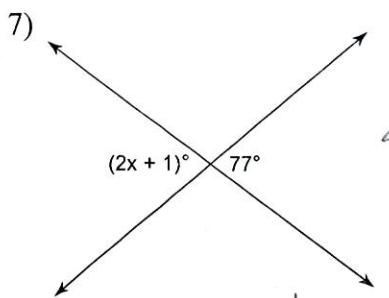
vertical angles are $\cong$.

8)
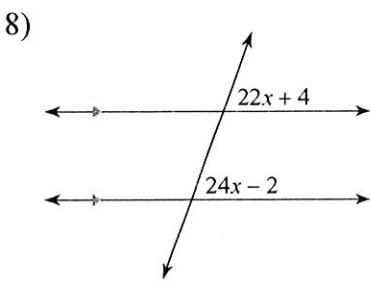
$22x + 4$

$24x - 2$

Corresponding angles are $\cong$.

$22x + 4 = 24x - 2$

$\underline{-22x \quad\quad\quad -22x}$

$4 = 2x - 2$

$\underline{+2 \quad\quad\quad +2}$

$6 = 2x$

$\boxed{3 = x}$

9)

$115°$

$6x + 5$
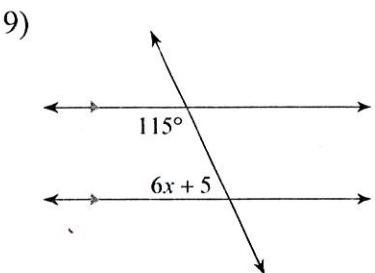
$115 + 6x + 5 = 180$

$6x + 120 = 180$

$6x = 60$

$\boxed{x = 10}$

Same-side int. angles are supplementary.

State all possible names for each figure.

10)
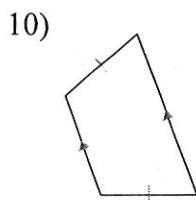
Quadrilateral
trapezoid
isosceles trapezoid

11)
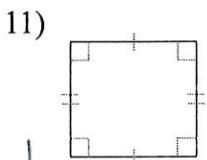
Quadrilateral
Parallelogram
rectangle

State if the two triangles are congruent. If they are, state how you know.

12)

$\boxed{ASA}$

13)
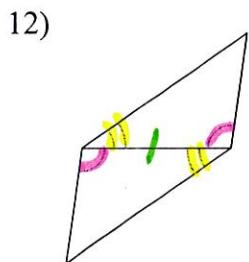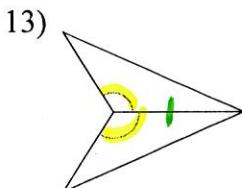
Not enough information.

$\boxed{\text{not} \cong}$

14)
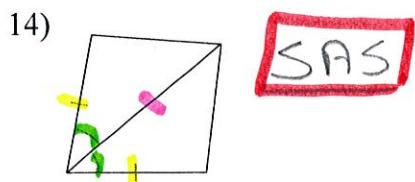
$\boxed{SAS}$

**Solve for *x*. Each figure is a parallelogram.**

15)

M   N

17x   95°

L   K
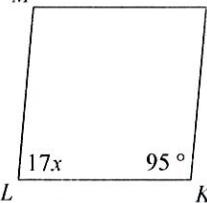
$17x + 95 = 180$

$17x = 85$

$x = 5$

Consecutive angles in a parallelogram are supplementary.

16)

X   W

x + 45   45°

Y   Z

$x + 45 = 45$

$-45 \quad -45$

$x = 0$

Opposite angles in a parallelogram are $\cong$.

17)

V   x – 5   S

U   6   T
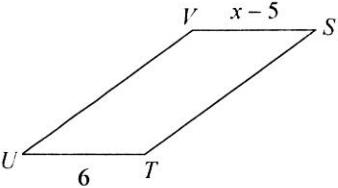
$6 = x - 5$

$+5 \quad\quad +5$

$11 = x$

Opposite sides in a parallelogram are $\cong$.

18) $NU = 15$
$WU = 3x - 3$

X   W

N

U   V
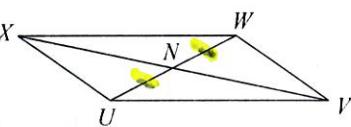
Diagonals in a parallelogram bisect each other.

$\overline{NU} = \overline{WN}$

$\overline{NU} + \overline{WN} = \overline{WU}$

$\overline{NU} + \overline{NU} = \overline{WU}$

$15 + 15 = 3x - 3$

$30 = 3x - 3$

$33 = 3x$

$11 = x$

19) $RT = 24$
$SU = 7x - 4$

S   T

R   U

Diagonals are $\cong$.

$24 = 7x - 4$

$+4 \quad\quad\quad +4$

$28 = 7x$

$4 = x$

Two sides of a triangle have the following measures. Find the range of possible measures for the third side.

20) 9, 12

$3 < x < 21$

**Order the sides of each triangle from shortest to longest.**

21)
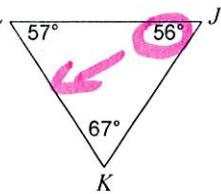
$$\overline{KL}, \overline{JK}, \overline{JL}$$

Shortest side → across from smallest ∠.
Longest side → across from largest ∠.

Determine whether the triangles are similar. If so, by what similarity postulate?

22) $\triangle UVW \sim \triangle USR$

$$\frac{24}{8} = \frac{12}{4}$$

$$3 = 3 \checkmark$$

$$\boxed{SAS \sim}$$

23)

$$\frac{14}{98} \overset{?}{=} \frac{9}{63}$$

$$14(63) = 9(98)$$

$$882 = 882 \checkmark$$

Reflexive angle

$$\boxed{SAS \sim}$$
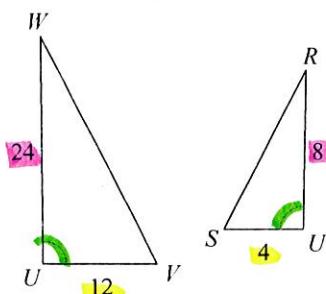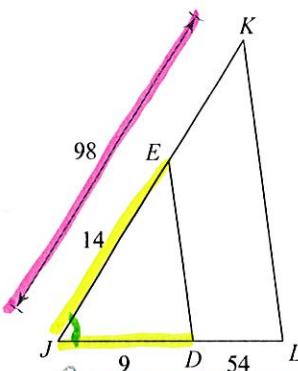
For #24: Find the trig ratio. For #25-#28, solve for the missing side or missing angle.

24) $\cos X$

$$\cos X = \frac{A}{H} = \frac{30}{50}$$

$$= \boxed{\frac{3}{5}}$$
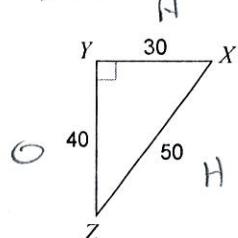
25)
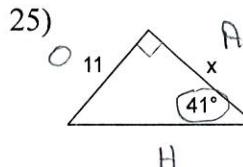
$$\tan 41 = \frac{11}{x}$$

$$x = \frac{11}{\tan 41}$$

$$x \approx \boxed{12.7}$$

26)
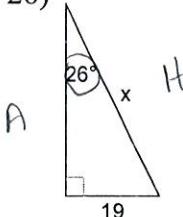
$$\sin 26 = \frac{19}{x}$$

$$x = \frac{19}{\sin 26}$$

$$x \approx \boxed{43.4}$$

27)
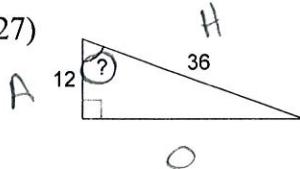
$$\cos \theta = \frac{12}{36}$$

$$\theta = \cos^{-1}\left(\frac{12}{36}\right)$$

$$\theta \approx \boxed{71°}$$

28)
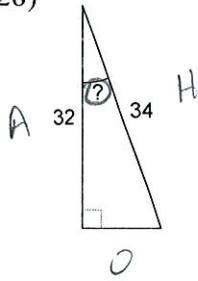
$\cos \theta = \dfrac{32}{34}$

$\theta = \cos^{-1}\left(\dfrac{32}{34}\right)$

$\theta \approx \boxed{20°}$

Solve for x.

29)
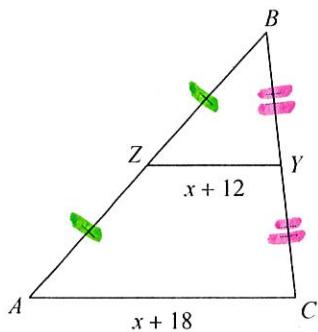
$2(x+12) = x+18$

$2x + 24 = x + 18$

$-x \qquad -x$

$x + 24 = 18$

$-24 \quad -24$

$x = \boxed{-6}$

30) $\triangle NML \sim \triangle FGH$
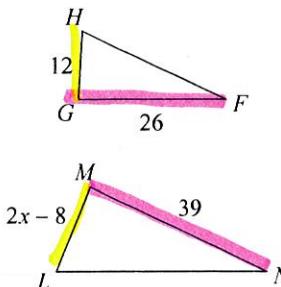
$\dfrac{12}{2x-8} = \dfrac{26}{39}$

$12(39) = 26(2x-8)$

$468 = 52x - 208$

$+208 \qquad +208$

$676 = 52x$

$\boxed{13 = X}$

31)
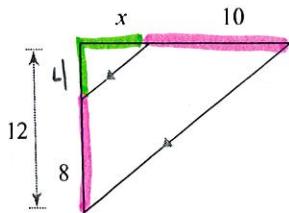
$\dfrac{4}{8} = \dfrac{x}{10}$

$40 = 8x$

$\boxed{5 = X}$

32)
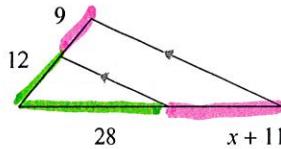
$\dfrac{12}{9} = \dfrac{28}{x+11}$

$9(28) = 12(x+11)$

$252 = 12x + 132$

$120 = 12x$

$\boxed{10 = X}$

Find the measure of the arc or angle indicated. Assume that lines which appear to be diameters are actual diameters.

33) $m\overset{\frown}{SU}$
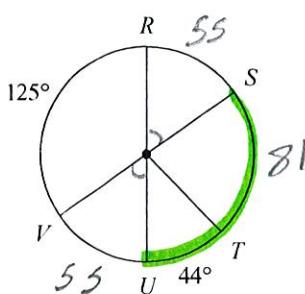
$\overset{\frown}{SU} = 81 + 44$

$= \boxed{125°}$

34)
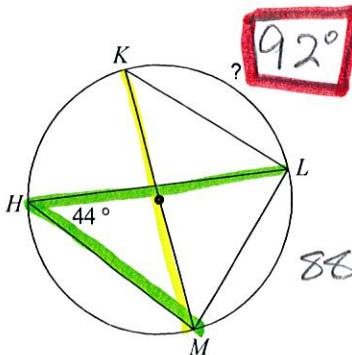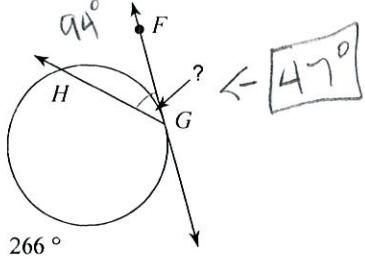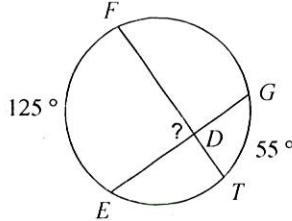
$\boxed{92°}$

35)

$94°$ F H G ? $266°$

$\angle = \frac{\frown}{2}$

$\angle = \boxed{47°}$

36)

F $125°$ G ? D $55°$ E T

$\angle = \frac{\frown + \frown}{2}$

$\angle = \frac{125 + 55}{2}$

$\angle = \boxed{90°}$

37)

$192°$ P ? $57°$ S R Q

$\angle = \frac{\overline{lg} - \overline{sm}}{2}$

$57 = \frac{192 - x}{2}$

$114 = 192 - x$
$-192 \quad -192$

$-78 = -x$

$\boxed{78 = x}$
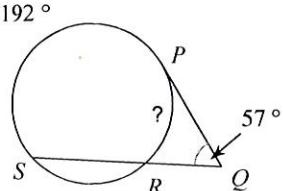
Find the arc length.

38)

11 km $225°$
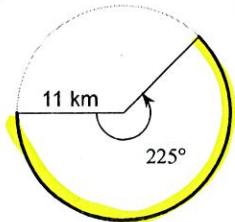
$\frac{\theta}{360} \cdot 2\pi r$

$\frac{225}{360} \cdot 2\pi \cdot 11$

$\frac{5}{8} \cdot 22 \cdot \pi$

$\frac{55}{4}\pi \approx \boxed{43.2 \text{ km}}$

Find the Area of the shaded region.

39)

12 mi $225°$
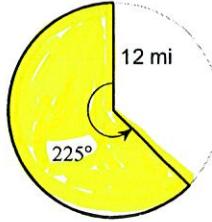
$\frac{\theta}{360} \cdot \pi r^2$

$\frac{225}{360} \cdot \pi \cdot 12^2$

$\frac{5}{8} \cdot 144 \cdot \pi$

$90\pi \approx \boxed{282.7 \text{ mi}^2}$

40) area = 9π km²

$r = 3$

$C = 2\pi 3$

$= 6\pi \approx \boxed{8.85 \text{ km}}$

41) circumference = 8π yd

$C = 2\pi r$

$2\pi r = 8\pi$

$2r = 8$

$\boxed{r = 4 \text{ yd}}$

42) area = 64π km²

$r = 8$

$2r = d$

$2(8) = \boxed{16 \text{ km}}$