

Semester Exam Practice #2 Key -1-

1) Decide which one of the following statements is false.

[A] Any three points lie on a distinct line.

[B] Three noncollinear points determine a plane.

[C] A line contains at least two points.

[D] Through any two distinct points there exists exactly one line.

2)

Write the symbolic statement in conditional or biconditional form and determine whether it is true or false. Then write the converse in symbolic form and determine whether it is true or false:

$\sim p \rightarrow \sim q$

$p =$ two angles are complementary

$q =$ the sum of their measures is 90°

If 2 are not complementary, then the sum of their measures is not 90° .

3)

$\angle 1$ and $\angle 2$ are supplementary angles. $\angle 1$ and $\angle 3$ are vertical angles. If $m\angle 2 = 72^\circ$, then find $m\angle 3$.

$$\begin{array}{r} 72^\circ + 3 \\ \hline 108 \end{array}$$

[A] 18°

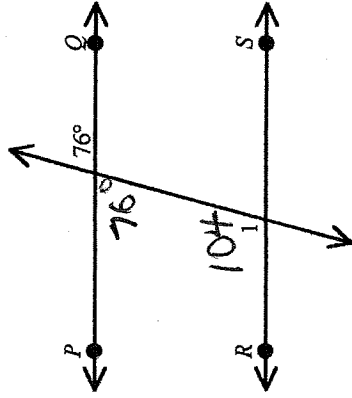
[B] 28°

[C] 108°

[D] 72°

4)

Find $m\angle 1$ in the figure below. \overleftrightarrow{PQ} and \overleftrightarrow{RS} are parallel.



[A] 14°

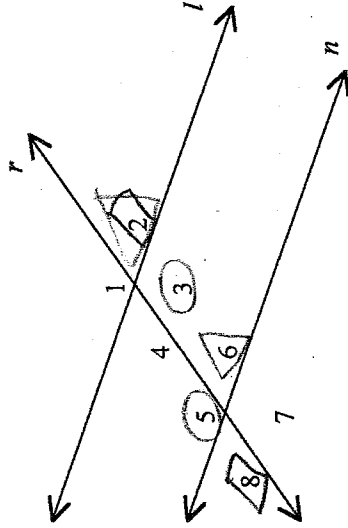
[B] 76°

[C] 94°

[D] 104°

5)

In the figure, $l \parallel n$ and r is a transversal. Which of the following is not necessarily true?



[A] $\angle 5 \cong \angle 3$

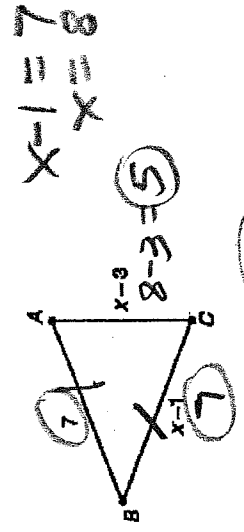
[B] $\angle 8 \cong \angle 2$

[C] $\angle 2 \cong \angle 6$

[D] $\angle 7 \cong \angle 4$

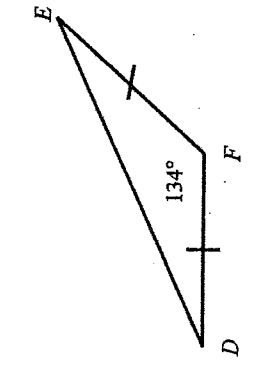
- 5) A line is perpendicular to $y = \frac{x}{3} - 2$ and passes through point (6, 2). Write its equation.
 $m = 1/3$
 $m_1 = -3$
 $y = mx + b$
 $2 = -3(6) + b$
 $2 = -18 + b$
 $20 = b$
 $y = -3x + 20$
 $-3(x-6) = y-2$
 $-3x+18 = y-2$
 $-3x+20 = y$

7) Given: $\overline{AB} \cong \overline{BC}$



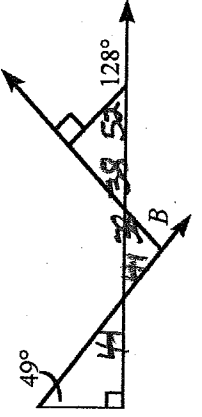
- A. Solve for x. **8**
 B. Is the triangle equilateral? **No**

8) Use information in the figure below to find $m\angle D$.



$\frac{1}{2}(46) = 23$
 $\angle D = 23^\circ$

9) Find the measure of $\angle B$.



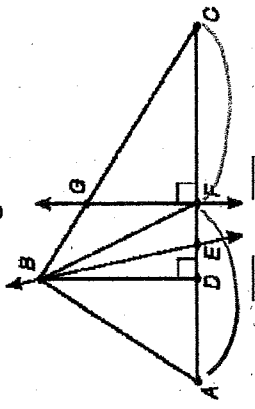
$\frac{38}{+41}$
 79°

Ext L = Sum of Remote Ang

$\angle B = 79^\circ$

10) The angle bisectors of a triangle are concurrent at a point called the incenter.

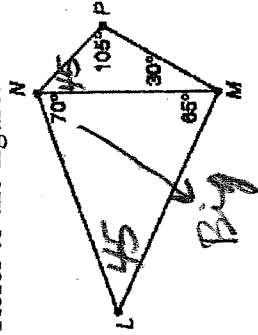
11) Refer to the figure below.



Given: $\overline{AF} \cong \overline{FC}$, $\angle ABE \cong \angle ECB$
 A median of $\triangle ABC$ is _____.

- [A] \overline{GF} [B] \overline{BD} [C] \overline{BE} [D] \overline{BF}

- 12 Refer to the figure. [A] \overline{MP} [B] \overline{ML} [C] \overline{LN} [D] \overline{NM}



The longest side is _____

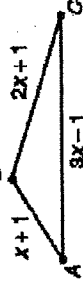
- 13 Using the Triangle Inequality Theorem, solve for all possible values of x .

$$x+1 + 3x-1 > 2x+1$$

$$4x > 2x+1$$

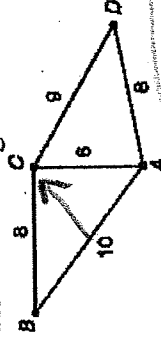
$$2x > 1$$

$$x > 1/2$$



- [A] $x < \frac{1}{2}$ [B] $x < \frac{1}{4}$ [C] $x > \frac{1}{2}$ [D] $x > \frac{1}{4}$

- 14 Refer to the figure. What is the largest angle, that is part of a triangle, in the figure?



$$m\angle PQ = \frac{4-0}{4-0} = \frac{4}{4} = 1$$

$$m\angle PS = \frac{4-1}{4-1} = \frac{3}{3} = 1$$

- 15 The coordinates of quadrilateral PQRS are P(-3, 0), Q(0, 4), R(4, 1), and S(1, -3). Which best describes the quadrilateral?

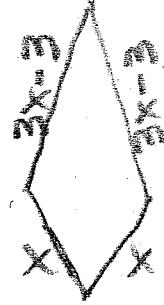
- [A] a rectangle [B] a rhombus [C] a square [D] a parallelogram

- 16 If the diagonals of a parallelogram are perpendicular, then the parallelogram is also what type of figure? *Rhombus*

- 17 Choose the statement that is NOT always true. For an isosceles trapezoid _____

- [A] the legs are congruent [B] the diagonals are congruent
 [C] the diagonals are perpendicular [D] the base angles are congruent

- 18 One side of a kite is 3 cm less than 3 times the length of another. If the perimeter is 42 cm, find the length of each side of the kite.



$$x + x + 3x - 3 + 3x - 3 = 42$$

$$8x - 6 = 42$$

$$8x = 48$$

$$x = 6$$

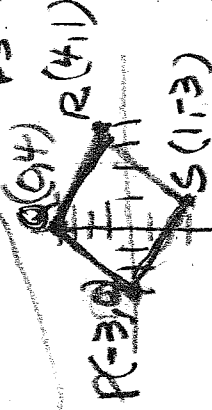


$$d_{PQ} = \sqrt{(-3)^2 + (-4)^2} = \sqrt{9+16} = 5$$

$$d_{RS} = \sqrt{3^2 + 4^2} = 5$$

$$m_{QR} = \frac{4-0}{0-0} = \frac{4}{0} = \text{undefined}$$

$$m_{PS} = \frac{-3-0}{1+0} = \frac{-3}{1} = -3$$



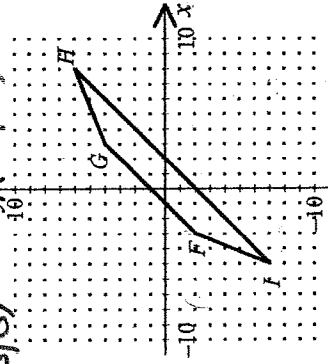
$$d_{QR} = \sqrt{4^2 + 3^2} = 5$$

$$d_{PS} = \sqrt{(4)^2 + (-3)^2} = 5$$

Sem Exam Practice #2 Key - 4-

19 Prove quadrilateral $FGHI$ is an isosceles trapezoid by showing it is a trapezoid with congruent diagonals.

$F(-3, -2)$
 $G(3, 4)$
 $H(8, 6)$
 $I(-5, -7)$



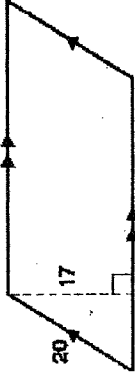
$$m_{FG} = \frac{6}{6} = 1 \quad m_{FH} = \frac{10}{10} = 1 \quad \therefore FG \parallel FH$$

$$m_{FI} = \frac{5}{5} \quad m_{GI} = \frac{2}{5} \quad \therefore FI \nparallel GI$$

$$d_{FH} = \sqrt{(8+3)^2 + (6+2)^2} = \sqrt{11^2 + 8^2} = \sqrt{121 + 64} = \sqrt{185}$$

$$d_{GI} = \sqrt{(5-3)^2 + (-7-4)^2} = \sqrt{(-2)^2 + (-11)^2} = \sqrt{4 + 121} = \sqrt{125}$$

20 The area of the parallelogram is ____.



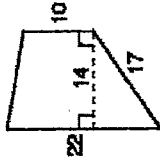
$$A = bh$$

$$= 40(17)$$

$$A = 680 \text{ u}^2$$

- [A] $40\sqrt{11}$ sq. units [B] 680 sq. units [C] 340 sq. units [D] 800 sq. units

21 Find the area of the trapezoid.



$$A = \frac{1}{2}h(b_1 + b_2)$$

$$= \frac{1}{2}(14)(10 + 17)$$

$$= 14(13.5)$$

$$A = 189 \text{ u}^2$$