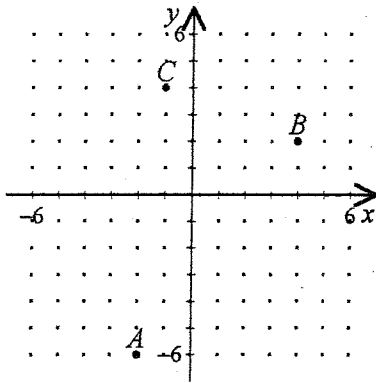


# Semester Exam Practice #1

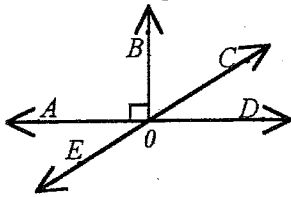
- ① Draw a diagram illustrating the conjecture. Then, draw a counterexample diagram showing the conjecture is not true.

If  $\overline{VW}$  and  $\overline{WX}$  are congruent, then  $W$  is the midpoint of  $\overline{VX}$ .

- ② Find the length of the segment from point  $C$  to the midpoint of  $\overline{AB}$ .

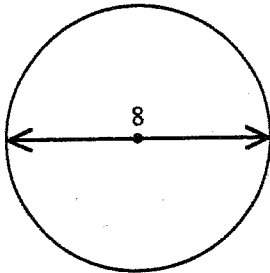


- ③ Name an angle complementary to  $\angle COD$ .



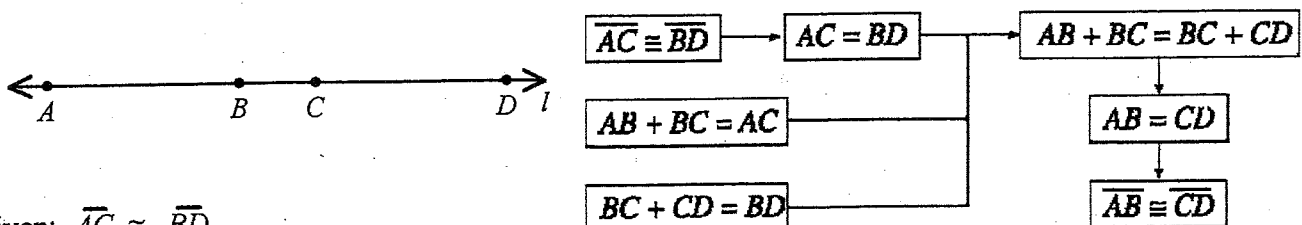
- [A]  $\angle DOE$  [B]  $\angle AOC$  or  $\angle DOE$  [C]  $\angle DOC$  or  $\angle AOE$  [D]  $\angle BOC$

- ④ Find the area and circumference of the circle. Use  $\pi = 3.14$ .



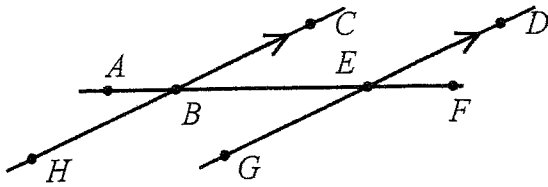
- ⑤ Write the converse of the true statement and decide whether the converse is true or false. If the converse is true, combine it with the original statement to form a true biconditional statement. If the converse is false, state a counterexample:  
If a ray bisects an angle, then it divides the angle into two congruent angles.

- ⑥ Write the reason for each step of the proof.



Given:  $\overline{AC} \cong \overline{BD}$   
Prove:  $\overline{AB} \cong \overline{CD}$

- 7 In the figure,  $m\angle ABC = 151^\circ$ . Which statement is false?



$m\angle GEF = 151^\circ$

$m\angle DEF = 151^\circ$

$\angle HBF$  and  $\angle AED$  are alternate interior angles.

$\angle ABH$  and  $\angle AEG$  are corresponding angles.

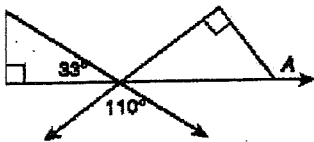
- 8 A line parallel to  $y = \frac{1}{2}x + 3$  and passing through  $(0, 0)$  has the equation \_\_\_\_\_.

- [A]  $y = 2x$       [B]  $y = \frac{1}{2}x$       [C]  $y = \frac{1}{2}x + 6$       [D]  $y = \frac{1}{2}x - 3$

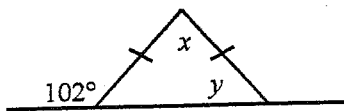
- 9 Which best describes the relationship between the lines with equations  $-5x - 7y = -1$  and  $-14x + 10y = 0$ ?

- [A] same line      [B] parallel  
[C] neither parallel nor perpendicular      [D] perpendicular

- 10 Find the measure of exterior angle  $A$ .



- 11 Find the values of  $x$  and  $y$ .



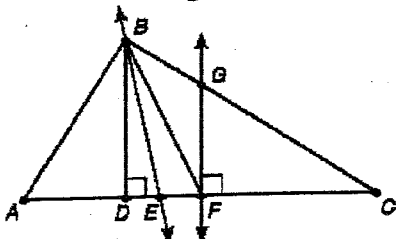
[A]  $x = 24^\circ$ ;  $y = 102^\circ$

[B]  $x = 78^\circ$ ;  $y = 102^\circ$

[C]  $x = 78^\circ$ ;  $y = 58^\circ$

[D]  $x = 24^\circ$ ;  $y = 78^\circ$

- 12 Refer to the figure below.

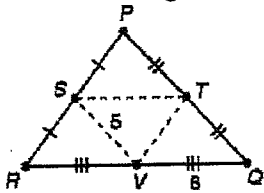


Given:  $\overline{AF} \cong \overline{FC}$ ,  $\angle ABE \cong \angle EBC$   
Which segment is a median of  $\triangle ABC$ ?

- 13 The medians of a triangle are concurrent. Their common point is the \_\_\_\_\_.

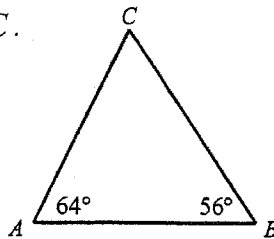
- [A] centroid      [B] circumcenter      [C] orthocenter      [D] incenter

- (14) For the triangle shown,  $VS = 5$  and  $VQ = 6$ . Then  $PQ =$  \_\_\_\_\_.



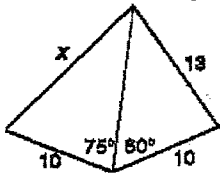
- [A] 5                      [B] 11                      [C] 12                      [D] 10

- (15) Identify the longest side of  $\triangle ABC$ .



- (16) Two sides of a triangle have sides 8 and 11. The length of the third side must be greater than \_\_\_\_\_ and less than \_\_\_\_\_.
- [A] 8, 11                      [B] 3, 19                      [C] 7, 12                      [D] 2, 20

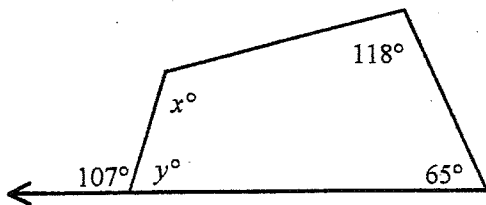
- (17) Refer to the figure. Choose the correct statement.



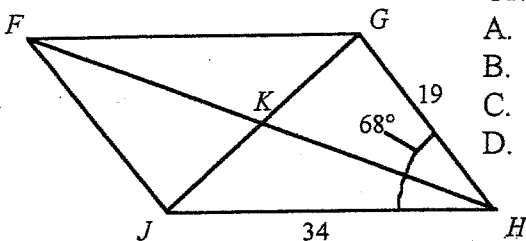
- [A]  $10 < x < 13$                       [B]  $x > 13$                       [C]  $x = 13$                       [D]  $x < 10$

- (18) How many diagonals does a convex pentagon have?

- (19) Find  $x$  and  $y$ .



- (20) Use the figure below.



- Given:  $FGJH$  is a parallelogram,  $m\angle JHG = 68^\circ$ ,  $JH = 34$ ,  $GH = 19$
- A. Find  $m\angle FJH$ .  
 B. Find  $JF$ .  
 C. Find  $m\angle GFJ$ .  
 D. Find  $FG$ .

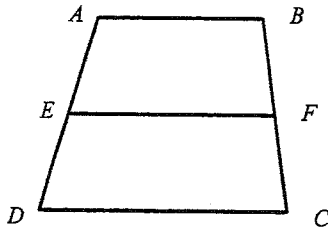
21) If the diagonals of a parallelogram are equal in length, then the parallelogram is also what type of figure?

22) Choose the statement that is NOT ALWAYS true.  
For a rhombus \_\_\_\_\_.

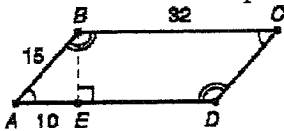
- [A] the diagonals are perpendicular    [B] the diagonals are congruent  
[C] all four sides are congruent    [D] each diagonal bisects a pair of opposite angles

23) Isosceles trapezoid  $ABCD$  has legs  $\overline{AB}$  and  $\overline{CD}$ , and base  $\overline{BC}$ . If  $AB = 5y + 4$ ,  $BC = 9y + 8$ , and  $CD = 2y + 6$ . Find the value of  $y$ .

24) Given: Trapezoid  $ABCD$  with midsegment  $\overline{EF}$ . If  $AB = 12$  and  $DC = 18$ , find the length of  $\overline{EF}$ .

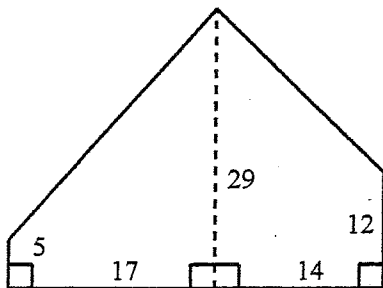


25) Given:  $ABCD$  is a parallelogram.



- A. Find the height,  $BE$ .  
B. Find the area of parallelogram  $ABCD$ .

26) Find the area of the region shown by dividing it into two trapezoids.



# Semester Exam Practice #2

- 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:

$$\sim p \rightarrow \sim q$$

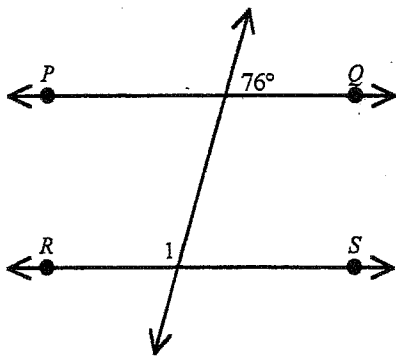
$p$  = two angles are complementary

$q$  = the sum of their measures is  $90^\circ$

- 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  $m\angle 3$ .

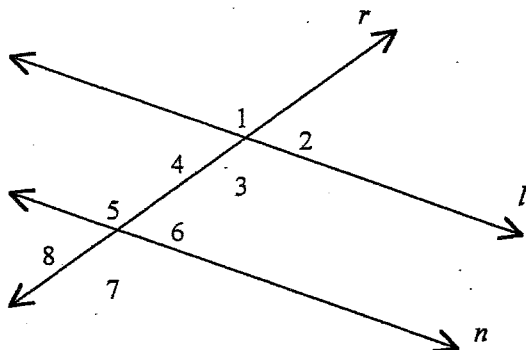
- [A]  $18^\circ$                       [B]  $28^\circ$                       [C]  $108^\circ$                       [D]  $72^\circ$

- ④ Find  $m\angle 1$  in the figure below.  $\overleftrightarrow{PQ}$  and  $\overleftrightarrow{RS}$  are parallel.



- [A]  $14^\circ$                       [B]  $76^\circ$                       [C]  $94^\circ$                       [D]  $104^\circ$

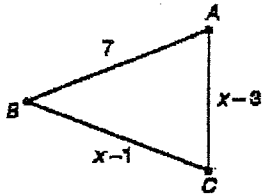
- ⑤ In the figure,  $l \parallel n$  and  $r$  is a transversal. Which of the following is not necessarily true?



- [A]  $\angle 5 \cong \angle 3$                       [B]  $\angle 8 \cong \angle 2$                       [C]  $\angle 2 \cong \angle 6$                       [D]  $\angle 7 \cong \angle 4$

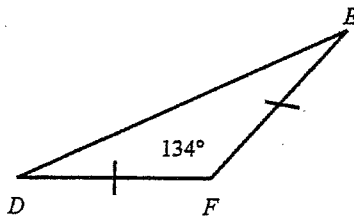
6 A line is perpendicular to  $y = \frac{x}{3} - 2$  and passes through point (6, 2). Write its equation.

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

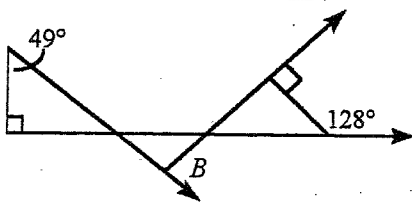


- A. Solve for  $x$ .
- B. Is the triangle equilateral?

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

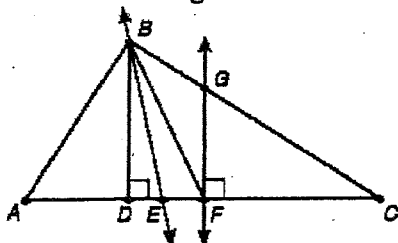


9 Find the measure of  $\angle B$ .



10 The angle bisectors of a triangle are concurrent at a point called the \_\_\_\_\_.

11 Refer to the figure below.



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

[A]  $\overrightarrow{GF}$

[B]  $\overline{BD}$

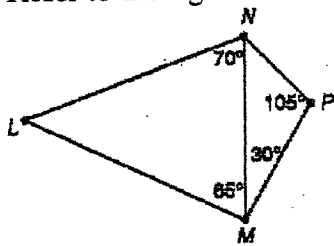
[C]  $\overrightarrow{BE}$

[D]  $\overline{BF}$

12

Refer to the figure.

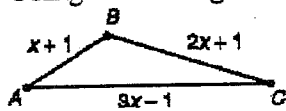
- [A]  $\overline{MP}$     [B]  $\overline{ML}$     [C]  $\overline{LN}$     [D]  $\overline{NM}$



The longest side is \_\_\_\_\_.

13

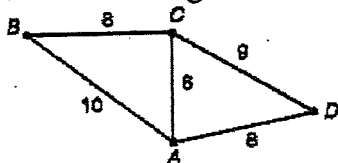
Using the Triangle Inequality Theorem, solve for all possible values of  $x$ .



- [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?



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?

17

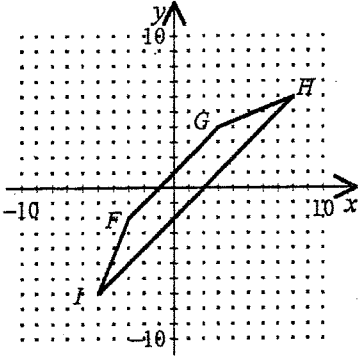
Choose the statement that is NOT always true.  
For an isosceles trapezoid \_\_\_\_\_.

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

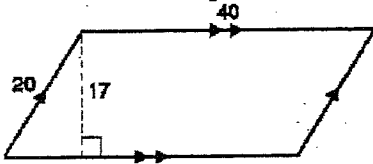
18

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.

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



- 20 The area of the parallelogram is \_\_\_\_\_.



- [A]  $40\sqrt{111}$  sq. units    [B] 680 sq. units    [C] 340 sq. units    [D] 800 sq. units

- 21 Find the area of the trapezoid.

