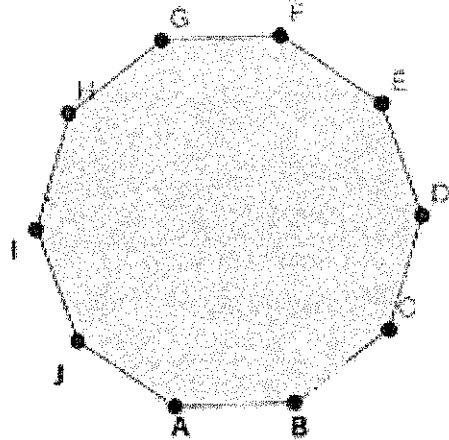


Name \_\_\_\_\_ Exam Review #3

**Symmetry** the number of lines of symmetry in a regular polygon = number of sides

**Angle of rotation** for a regular polygon =  $\frac{360}{\text{number of sides}}$

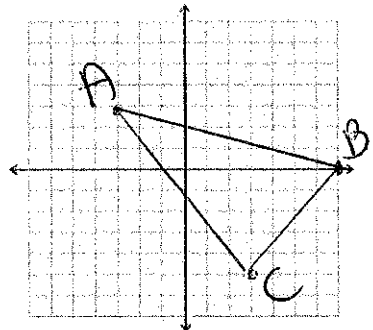
**Additional angles of rotation:** all multiples of the angle of rotation



1. Consider the decagon:  
How many lines of reflection will carry the shape onto itself? \_\_\_\_\_
2. What is the angle of rotation? \_\_\_\_\_
3. Give all additional angles of rotation  
\_\_\_\_\_
4. What degree of rotation would map  $\overline{BC}$  onto  $\overline{FG}$ ?  
\_\_\_\_\_
5. What degree of rotation would map  $\overline{BC}$  onto  $\overline{IJ}$ ?
6. Rotate  $\overline{HI}$   $72^\circ$ . What is its image? \_\_\_\_\_
7. Rotate  $\overline{HI}$   $180^\circ$ . What is its image? \_\_\_\_\_
8. State the number of sides in a pentagon \_\_\_\_\_ hexagon \_\_\_\_\_ octagon \_\_\_\_\_
9. List the rigid transformations that apply to each property:
  1. Distance between the points stays the same (sides are congruent)  
\_\_\_\_\_
  2. Angles are congruent \_\_\_\_\_
  3. Parellelism (shape remains the same) \_\_\_\_\_
  4. Orientation (order of letters in a clockwise direction stays the same)  
\_\_\_\_\_
10. What is a formal definition? \_\_\_\_\_
11. What are the three undefined terms in Geometry, also meaning they have no formal definition? \_\_\_\_\_

Midpoint formula: \_\_\_\_\_

12. Find the midpoint: (-5, 16) and (-15, 8)    13. Find the midpoint of AB



Parallel lines:

- coplanar
- they never intersect
- they have the same slope and different y-intercepts

Name the slope of the line parallel to the line given:

14.  $y = \frac{2}{5}x - 6$

15.  $(-6, 10) (-4, 18)$

Write the equation of the line parallel to the given line through the given point:

16.  $y = -4x + 8$   $(32, 200)$

Perpendicular lines:

- intersect at  $90^\circ$  angles
- slopes are opposite reciprocals

Name the slope of the line perpendicular to the line given:

17.  $y = \frac{2}{5}x - 6$

18.  $(-6, 10) (-4, 18)$

Write the equation of the line that is perpendicular to the given line through the point:

19.  $y = -4x + 8$   $(32, 200)$

Name \_\_\_\_\_ Review 3 Practice

Name the number of lines of reflection in a

1. octagon \_\_\_\_\_      2. Pentagon \_\_\_\_\_      3. Hexagon \_\_\_\_\_

4. What is the angle of rotation for the hexagon? \_\_\_\_\_

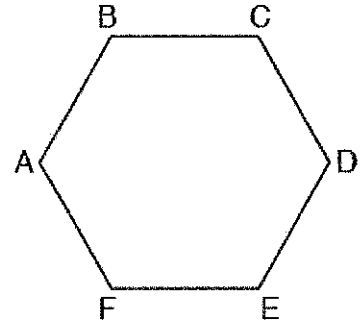
5. What angle of rotation would map  $\overline{BC}$  onto  $\overline{FA}$ ? \_\_\_\_\_

6. What angle of rotation would map  $\overline{BC}$  onto  $\overline{DE}$ ? \_\_\_\_\_

7. Rotate  $\overline{FE}$   $120^\circ$  what is its image? \_\_\_\_\_

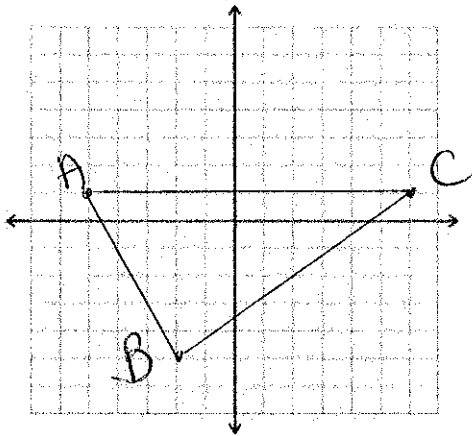
8. Rotate  $\overline{FE}$   $180^\circ$  what is its image? \_\_\_\_\_

9. Rotate  $\overline{FE}$   $300^\circ$  what is its image? \_\_\_\_\_

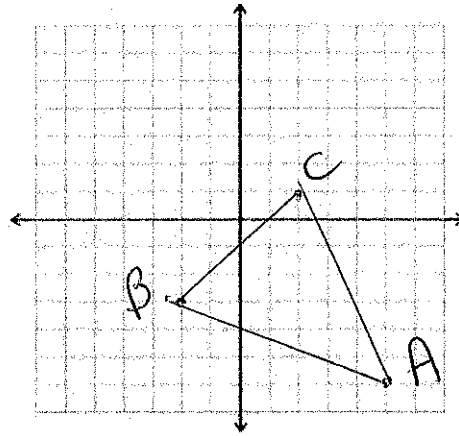


Find the midpoint of AB

10.



11.



Find the slope of the line parallel to each line:

12.  $y = 5x + 3$

13.  $y = -\frac{2}{3}x + 1$

14.  $(10, 2)$   $(4, 1)$

15.  $(-6, 8)$   $(2, -12)$

Find the slope of the line perpendicular to each line:

16.  $y = 5x + 3$

17.  $y = -\frac{2}{3}x + 1$

18.  $(10, 2)$   $(4, 1)$

19.  $(-6, 8)$   $(2, -12)$

Write the equation of the line parallel to the given line through the given point

20.  $y = \frac{3}{2}x + 8$   $(12, 20)$

21.  $y = 2x - 9$   $(-8, 30)$

Write the equation of the line perpendicular to the given line through the given point

22.  $y = \frac{3}{2}x + 8$   $(12, 20)$

23.  $y = 2x - 9$   $(-8, 30)$

Name Key Exam Review #3

**Symmetry** the number of lines of symmetry in a regular polygon = number of sides

**Angle of rotation** for a regular polygon =  $\frac{360}{\text{number of sides}}$

**Additional angles of rotation:** all multiples of the angle of rotation

1. Consider the decagon:  
How many lines of reflection will carry the shape onto itself? 10

2. What is the angle of rotation?  $\frac{360}{10} = 36^\circ$

3. Give all additional angles of rotation  
36, 72, 108, 144, 180, 216, 252, 288, 324, 360

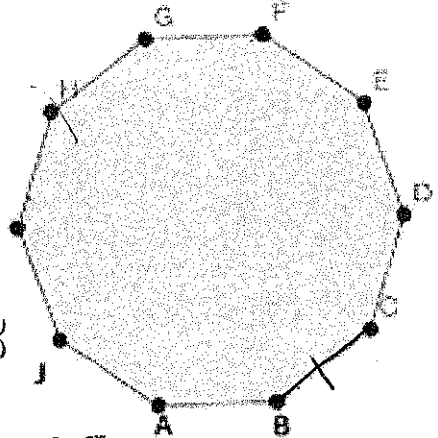
4. What degree of rotation would map  $\overline{BC}$  onto  $\overline{FG}$ ?  
 $4 \cdot 36 = 144^\circ$

5. What degree of rotation would map  $\overline{BC}$  onto  $\overline{IJ}$ ?  $7 \cdot 36 = 252^\circ$

6. Rotate  $\overline{HI}$   $72^\circ$ . What is its image?  $\overline{FG}$

7. Rotate  $\overline{HI}$   $180^\circ$ . What is its image?  $\overline{CD}$

8. State the number of sides in a pentagon 5 hexagon 6 octagon 8



9. List the rigid transformations that apply to each property:

1. Distance between the points stays the same (sides are congruent)

translation, rotation, reflection

2. Angles are congruent translation, rotation, reflection

3. Parallelism (shape remains the same) translation, rotation, reflection

4. Orientation (order of letters in a clockwise direction stays the same)

translation, rotation

→ \* Dilations: #2,3,4! ←

10. What is a formal definition? detailed, textbook-like

11. What are the three undefined terms in Geometry, also meaning they have no formal definition? point, line, plane

Midpoint formula:  $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$

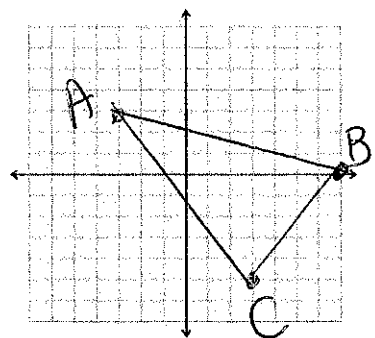
12. Find the midpoint: (-5, 16) and (-15, 8)    13. Find the midpoint of AB

$$\left( \frac{-5 + -15}{2}, \frac{16 + 8}{2} \right)$$

$$\boxed{(-10, 12)}$$

A = (-3, 3)  
B = (7, 0)

$$\left( \frac{-3 + 7}{2}, \frac{3 + 0}{2} \right) = \boxed{(2, 1.5)}$$



Parallel lines:

- coplanar
- they never intersect
- they have the same slope and different y-intercepts

Name the slope of the line parallel to the line given:

14.  $y = \frac{2}{5}x - 6$

$\frac{2}{5}$

15.  $(-6, 10) (-4, 18)$

4

slope slide  
 $\begin{array}{r} (-6, 10) \\ (-4, 18) \\ \hline -8 \\ -2 \end{array}$

Write the equation of the line parallel to the given line through the given point:

16.  $y = -4x + 8$  (32, 200)  
xy

$200 = -4(32) + b$

$200 = -128 + b$

$+ 128 \quad + 128$

$328 = b$

$y = -4x + 328$

Perpendicular lines:

- intersect at  $90^\circ$  angles
- slopes are opposite reciprocals

Name the slope of the line perpendicular to the line given:

17.  $y = \frac{2}{5}x - 6$

$-\frac{5}{2}$

18.  $(-6, 10) (-4, 18)$

$-\frac{1}{4}$

Write the equation of the line that is perpendicular to the given line through the point:

19.  $y = -4x + 8$  (32, 200)

$m = -4 \quad \perp m = \frac{1}{4}$

$200 = \frac{1}{4}(32) + b$

$200 = 8 + b$   
 $-8 \quad -8$

$192 = b$

$y = \frac{1}{4}x + 192$

# Key

Name \_\_\_\_\_ Review 3 Practice

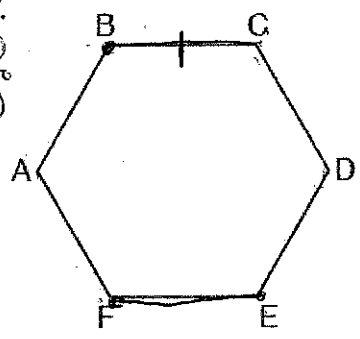
Name the number of lines of reflection in a

1. octagon 8      2. Pentagon 5      3. Hexagon 6

4. What is the angle of rotation for the hexagon?  $\frac{360}{6} = 60^\circ$

5. What angle of rotation would map  $\overline{BC}$  onto  $\overline{FA}$ ?  $2 \cdot 60 = 120^\circ$

6. What angle of rotation would map  $\overline{BC}$  onto  $\overline{DE}$ ?  $4 \cdot 60 = 240^\circ$



7. Rotate  $\overline{FE}$   $120^\circ$  what is its image?  $\overline{DC}$

8. Rotate  $\overline{FE}$   $180^\circ$  what is its image?  $\overline{CB}$

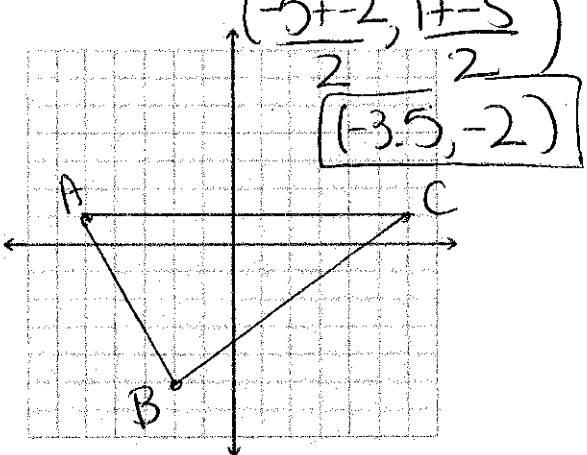
9. Rotate  $\overline{FE}$   $300^\circ$  what is its image?  $\overline{AF}$

} order matters

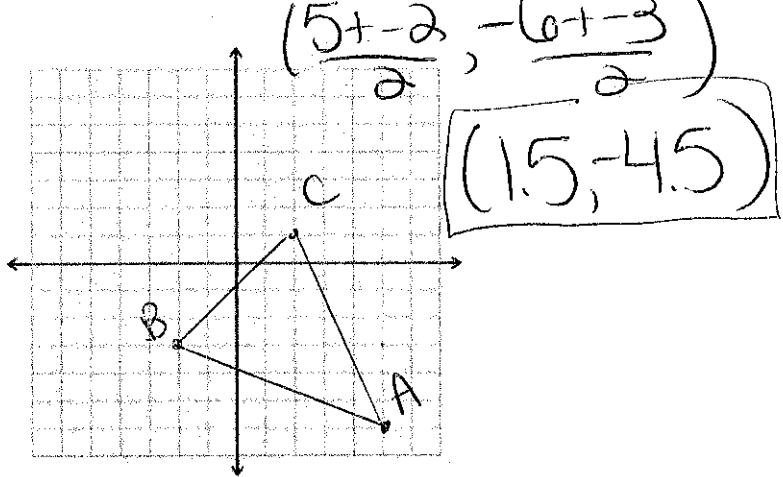
$\frac{120}{60} = 2$   
 $\frac{180}{60} = 3$   
 $\frac{300}{60} = 5$

Find the midpoint of AB

10.  $A(-5, 1)$   $B(-2, -5)$



11.  $A(5, -6)$   $B(-2, -3)$



Find the slope of the line parallel to each line:

12.  $y = 5x + 3$   
 $m = 5$

13.  $y = -\frac{2}{3}x + 1$   
 $m = -\frac{2}{3}$

14.  $(10, 2)$   $(4, 1)$   
 $\frac{2 - 1}{10 - 4} = \frac{1}{6}$   
 $m = \frac{1}{6}$

15.  $(-6, 8)$   $(2, -12)$   
 $\frac{8 - (-12)}{-6 - 2} = \frac{20}{-8} = -\frac{5}{2}$   
 $m = -\frac{5}{2}$

Find the slope of the line perpendicular to each line:

16.  $y = 5x + 3$

$m = 5$   
 $\perp m = -\frac{1}{5}$

18.  $(10, 2) (4, 1)$

$m = \frac{1}{6}$

$\perp m = -6$

17.  $y = -\frac{2}{3}x + 1$

$m = -\frac{2}{3}$   
 $\perp m = \frac{3}{2}$

19.  $(-6, 8) (2, -12)$

$m = -\frac{5}{2}$

$\perp m = \frac{2}{5}$

Write the equation of the line parallel to the given line through the given point

20.  $y = \frac{3}{2}x + 8$   $(12, 20)$   
 $x \ y$

$20 = \frac{3}{2}(12) + b$

$20 = 18 + b$   
 $-18 \quad -18$

$2 = b$

$y = \frac{3}{2}x + 2$

21.  $y = 2x - 9$   $(-8, 30)$   
 $x \ y$

$30 = 2(-8) + b$

$30 = -16 + b$   
 $+16 \quad +16$

$46 = b$

$y = 2x + 46$

Write the equation of the line perpendicular to the given line through the given point

22.  $y = \frac{3}{2}x + 8$   $(12, 20)$

$m = \frac{3}{2} \quad \perp m = -\frac{2}{3}$

$20 = \frac{2}{3}(12) + b$

$20 = 8 + b$   
 $+8 \quad +8$

$28 = b$

$y = -\frac{2}{3}x + 28$

23.  $y = 2x - 9$   $(-8, 30)$

$m = 2 \quad \perp m = -\frac{1}{2}$

$30 = -\frac{1}{2}(-8) + b$

$30 = 4 + b$   
 $+1 \quad +1$

$31 = b$

$y = -\frac{1}{2}x + 31$