Key

Unit 2 Review for Test Day 1

1. What are the 3 undefined terms in geometry? Point, line, plane
2. What are their informal definitions?

A point is a location.

A plane is a flat surface that has no thickness.

A line is a series of points.

3. What is the formal definition of the following terms in geometry?

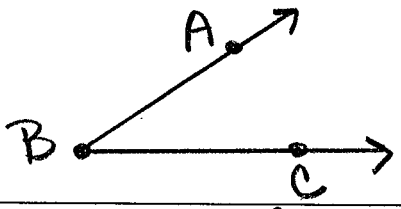
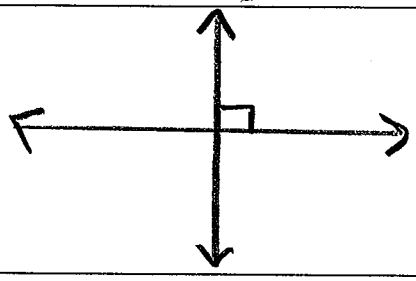
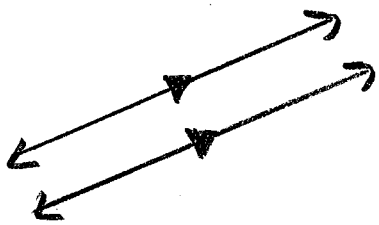
segment _____

Angle An angle is formed by 2 rays w/ the same endpoint.

Perpendicular Lines are lines that intersect and form right angles.

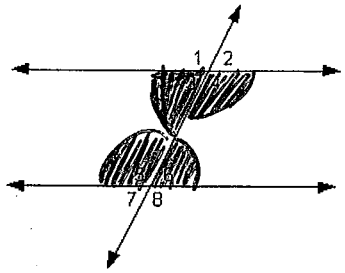
Parallel Lines Lie in the same plane and do not intersect.

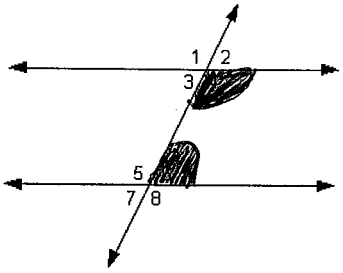
Show an example of the symbols used to name them and draw a precise picture using tools and marks.

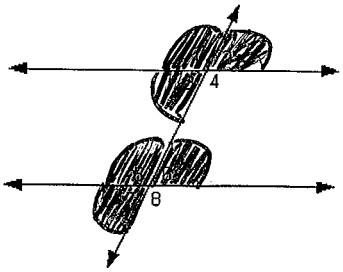
Line Segment Symbol: $\overline{AB}$	Picture: 
Angle Symbol: $\angle ABC$ or $\angle CBA$	Picture: 
Perpendicular Lines Symbol: $\perp$ lines	Picture: 
Parallel Lines Symbol: //	Picture: 

Use the following colors to show that you understand the angle relationships.

4. Green AIA Red AIA 5. Blue SSIA Yellow SSIA 6. Green Red Yellow Blue CA







7. Define congruent angles. Angles w/ the exact same measure.

Define Supplementary Angles Angles added together equal 180°

8. Look at the picture. List the angle relationship (AIA, AEA, SSIA, SSEA, CA) and whether they are congruent or supplementary.

a. < 1 *and* < 5 CA & $\cong$

b. < 3 *and* < 6 AIA & $\cong$

c. < 3 *and* < 5 SSIA & 180°

d. < 4 *and* < 5 AIA & $\cong$

e. < 2 *and* < 6 CA & $\cong$

f. < 2 *and* < 8 SSEA & 180°

g. < 3 *and* < 7 CA & $\cong$

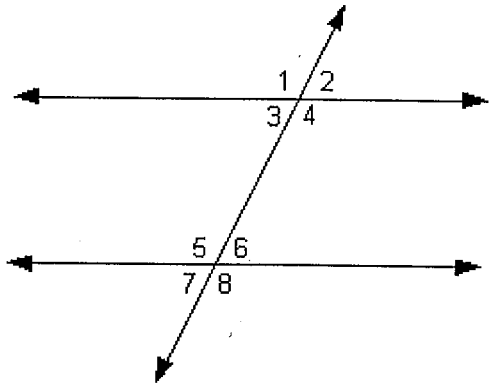
h. < 4 *and* < 6 SSIA & 180°

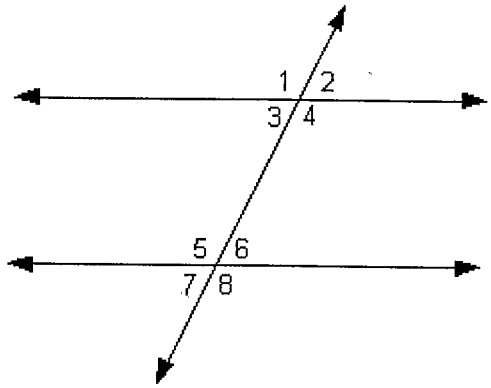
i. < 1 *and* < 8 AEA & $\cong$

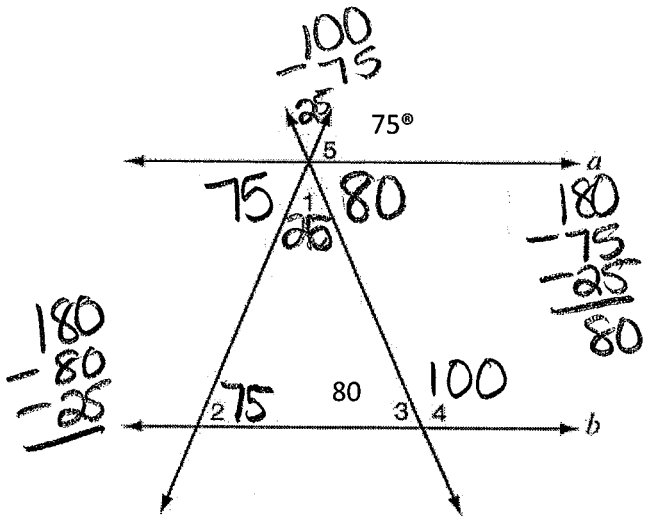
j. < 1 *and* < 7 SSEA & 180°

k. < 4 *and* < 8 CA & $\cong$

l. < 2 *and* < 7 AEA & $\cong$







9. What are the measures of the following angles?

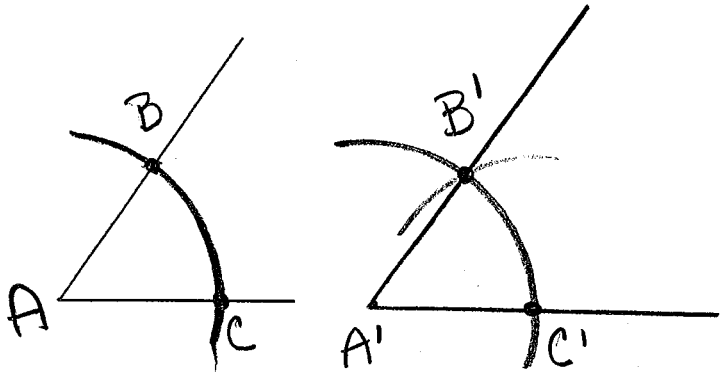
Be sure to use whatever angle relationships you know. For example: AIA, VA, Linear Pairs.

$m<1 =$ 25° $m<2 =$ 75° $m<4 =$ 100°

10. Know all of the steps for the following constructions: copy an angle, angle bisector, perpendicular bisector. If you need extra practice with learning the steps, go to mathopenref.com to view all of the videos we used as support in class. Write out the steps you use to complete each construction. Be sure to use variables so that you can identify the steps correctly.

Construct a copy of the angle given.

a.

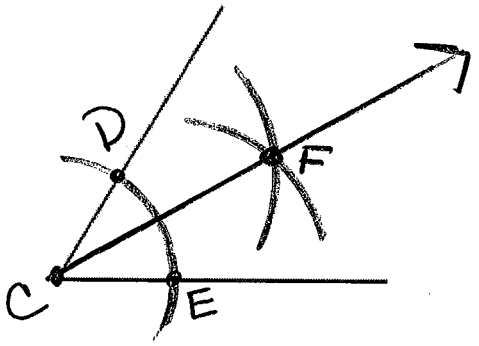


Steps:

1. Draw 1 side of the "new angle"
2. Make congruent arcs at ∠A & ∠A'
3. Label points B, C, C'.
4. Use the compass to measure the distance from B to C.
5. Put compass point on C' and make an arc. Label the intersection B'.
6. Draw a line from A' through B'.

Construct the angle bisector.

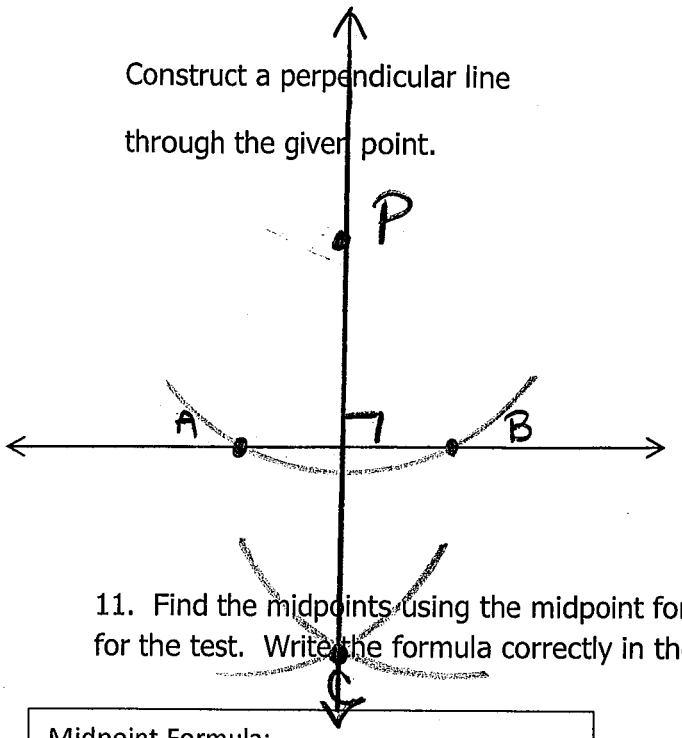
b.



Steps:

1. With the compass point on point C, make an arc, any length.
2. Mark points D and E.
3. Put the compass on points D and E and draw a pair of arcs with the same compass length.
4. Label the intersection F.
5. Draw a line from C through F.

Construct a perpendicular line through the given point.



Steps:

1. With the compass point on P, make an arc that intersects the line at 2 points.
2. Label those points A & B.
3. Put the compass point on A & B, and draw a pair of congruent arcs with the same compass length or make the length longer.
4. Label the intersection C.
5. Draw a line through C and P.

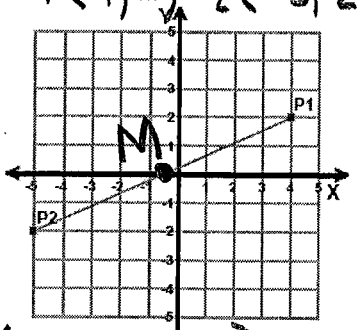
11. Find the midpoints using the midpoint formula. You MUST memorize the midpoint formula for the test. Write the formula correctly in the box before you begin the problems.

Midpoint Formula:

$$M = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

Make sure to plot each of your answers to see that they actually make sense with the problem.

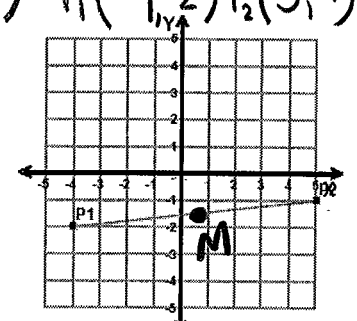
$P_1(4,2)\ P_2(-5,-2)$



$\left(\frac{4+-5}{2}, \frac{2+-2}{2}\right)$

M= $\left(-\frac{1}{2}, 0\right)$

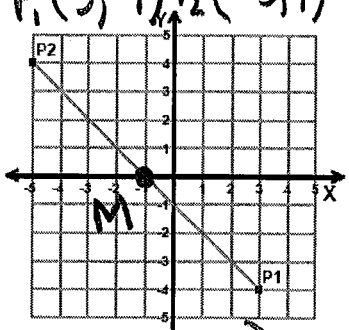
$P_1(-4,-2)\ P_2(5,-1)$



$\left(\frac{-4+5}{2}, \frac{-2+-1}{2}\right)$

M= $\left(\frac{1}{2}, -\frac{3}{2}\right)$

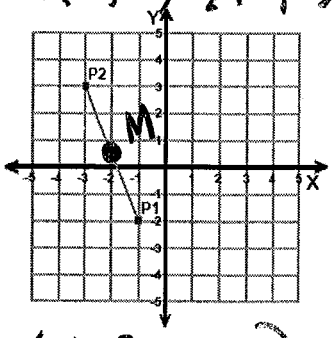
$P_1(3,-4)\ P_2(-5,4)$



$\left(\frac{3+-5}{2}, \frac{-4+4}{2}\right)$

M= $(-1, 0)$

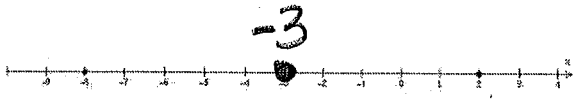
$P_1(-1,-2)\ P_2(-3,3)$



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

M= $\left(-2, \frac{1}{2}\right)$

12. Find the midpoint on a number line.



M= -3

$$\frac{-8+2}{2} = \frac{-6}{2} = -3$$

Use the picture to the right to find x and $m < CAD$.

13. $m < CAB = 10x - 4$ *and* $m < DAB = 3x + 17$

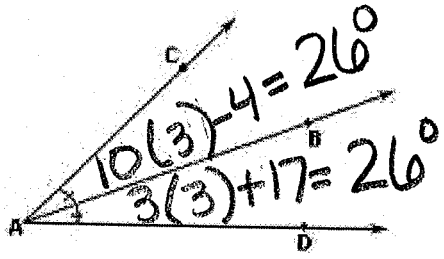
$10x - 4 = 3x + 17$

$-3x \qquad +4$

$\frac{7x}{7} = \frac{21}{7} \quad x = 3$

$26 + 26 = 52°$

X= 3 $m < CAD =$ 52°



14. $m < CAB = 5x + 2$ *and* $m < DAB = 8x - 10$

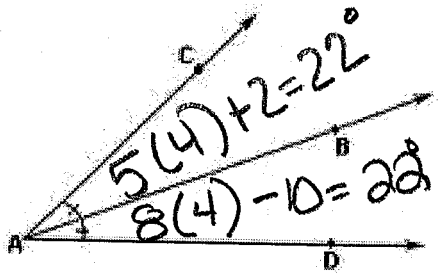
$5x + 2 = 8x - 10$

$-8x \qquad -2$

$\frac{-3x}{-3} = \frac{-12}{-3} \quad x = 4$

$22 + 22 = 44°$

X= 4 $m < CAD =$ 44°



Use the picture to the right. Find X, the length of $\overline{AM}$, the length of $\overline{BM}$, and the length of $\overline{AB}$.

15. $\overline{AM} = 2x + 8$ $\overline{BM} = 5x - 7$

$2x + 8 = 5x - 7$

$-5x \qquad -8$

$\frac{-3x}{-3} = \frac{-15}{-3} \quad x = 5$

$2(5) + 8 = 18$

$5(5) - 7 = 18$

X= 5 $\overline{AM} =$ 18 $\overline{BM} =$ 18

16. $\overline{AM} = 7x + 15$, $\overline{BM} = 10x$

$7x + 15 = 10x$

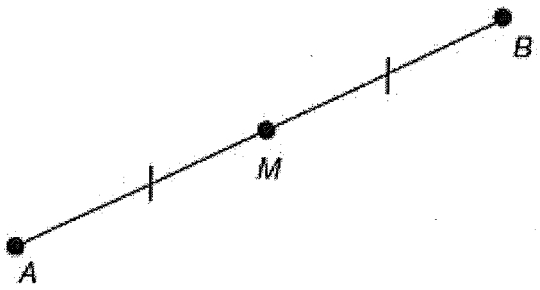
$-7x \qquad -7x$

$\frac{15}{3} = \frac{3x}{3} \quad x = 5$

X= 5 $\overline{AM} =$ 50 $\overline{BM} =$ 50

$7(5) + 15 = 50$

$10(5) = 50$



M is the midpoint of $\overline{AB}$

17 Which line is **NOT parallel** to the following line:

Y = 3x + 7

A $y = 3x + 9$

B $y = 7x + 5$

C $y = 3x - 7$

D $y = 3x$

18 Which line is **perpendicular** to the following line:

$y = -\frac{6}{7}x + 12$?

A $y = -\frac{6}{7}x - 4$

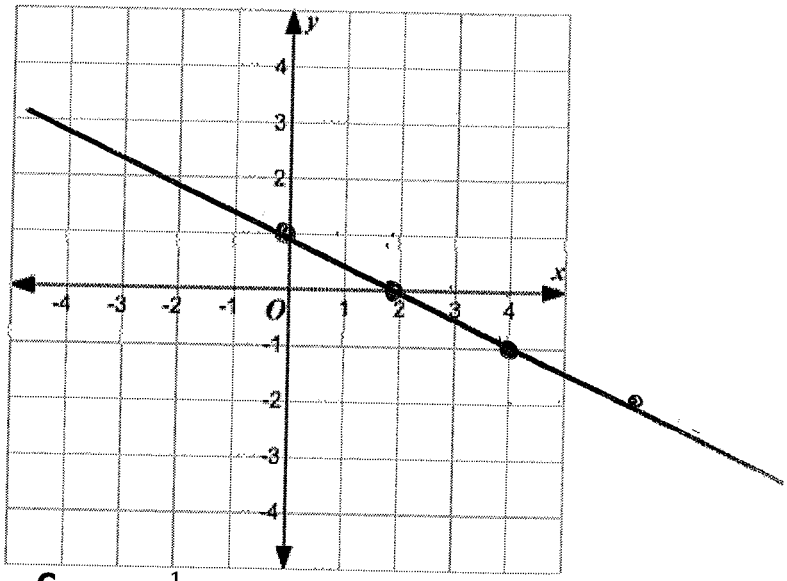
B $y = \frac{7}{6}x + 12$

C $y = -\frac{7}{6}x + 12$

D $y = \frac{6}{7}x - 5$

19 Write the equation of the line that is **parallel** to $y = -\frac{1}{2}x + 3$ through (4, -1)? You may solve an equation or use a graph to solve for b.
Hint: y = mx + b

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



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

B $y = -\frac{1}{2}x - 1$

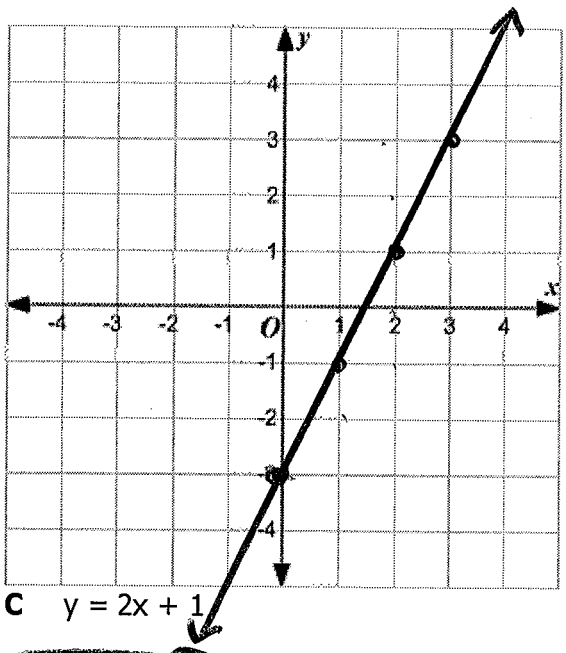
C $y = -\frac{1}{2}x + 3$

D $y = -\frac{1}{2}x + 5$

20 Write the equation of the line that is **perpendicular** to $y = -\frac{1}{2}x + 3$ through (2, 1)? You may solve an equation or use a graph to solve for b.
Hint: y = mx + b

$m = \frac{2}{1}$

$y = 2x - 3$



A y = -2x + 5

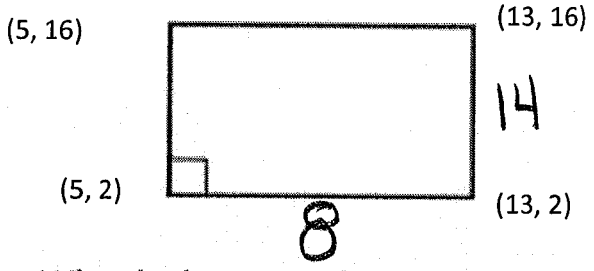
B y = -2x – 4

C y = 2x + 1

D y = 2x - 3

21

The vertices of a rectangle have coordinates as shown below.



$A = (14)(8)$

What is the area of the rectangle, in square units?

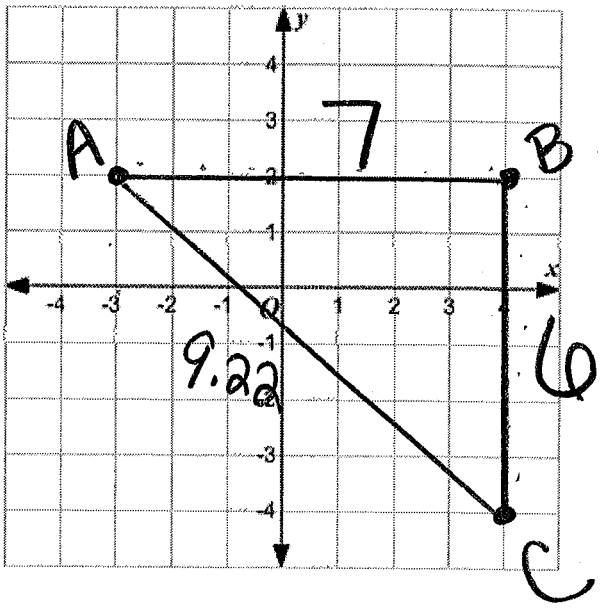
A 84

B 66

C 112

D 44

22 A triangle has the following vertices:
A (-3, 2) B (4, 2) C (4, -4)
Find the perimeter and area of the triangle.



Hints:
Find the lengths of each side:
AB 7 BC 6 AC _____
Use the distance formula for any diagonal sides:

$$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$AC=\sqrt{(-3-4)^2+(2--4)^2}=\sqrt{85}=9.22$

Perimeter = distance around the triangle (add all sides)
Area of a triangle: $A=\frac{1}{2}bh$

$P=9.22+7+6=22.2$

$A=\frac{1}{2}(7)(6)=21$

A ~~Perimeter = 21.5 units, Area = 42 units^2~~

B Perimeter = 22.2 units, Area = 42 units^2

C Perimeter = 21.5 units, Area = 21 units^2

D Perimeter = 22.2 units, Area = 21 units^2

23 Find the perimeter of the figure:

Hints:

Find all of the side lengths:

JK 5 JM 8 ML 11

LK _____

Use the distance formula for any diagonal sides:

$$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

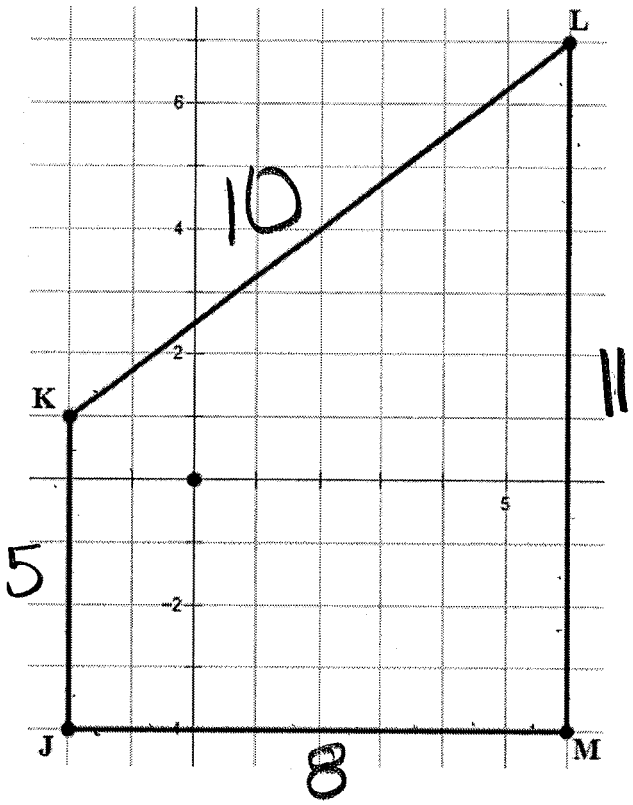
K(-2,1) L(6,7)

Perimeter = add up all of the sides

$KL = \sqrt{(-2-6)^2+(1-7)^2}$

$= \sqrt{100} = 10$

$P = 10+5+8+11 =$



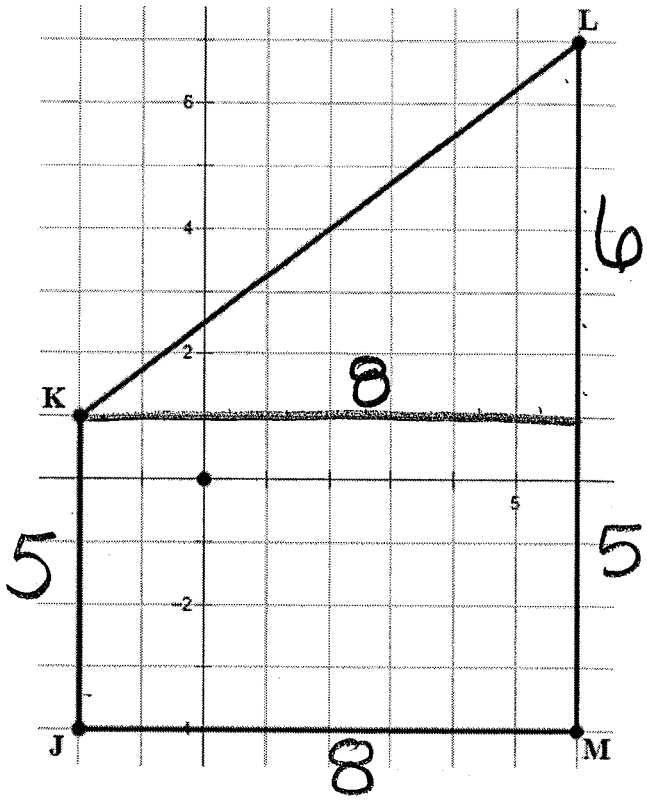
A Perimeter = 34 units

B Perimeter = 24 units

C Perimeter = 64 units

D Perimeter = 48 units

24 Find the area of the figure:
Hints:
Find all of the side lengths:
JK 5 JM 8 ML 11
LK _____



Area = split into a triangle and rectangle, find each area.
Triangle: $A = \frac{1}{2}bh$
Rectangle: $A = bh$

$A = \frac{1}{2}(6)(8) = 24$

$A = 8(5) = 40$

Total: $24 + 40 = 64$

A Area = 88 units^2

B Area = 64 units^2

C Area = 48 units^2

D Area = 60 units^3