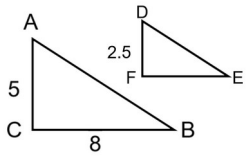
MPM 2D Exam Part 1 Name: _____
Mr. Kempe Monday, November 9th, 2020

Exam Part 1

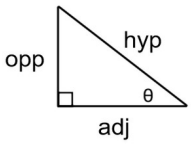
(Similar Triangles, Trigonometry, Linear Systems, Analytic Geometry)
[40 marks]

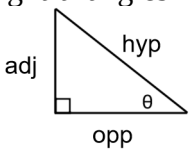
Part A: Multiple Choice [10 marks]

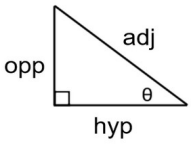
1. In the diagram, △ABC ~ △DEF. What is the length of EF?
   a. 4 b. 5.5
   c. 16 d. 100

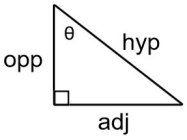


2. Which of the following right-triangles has been correctly labeled with respect to θ?

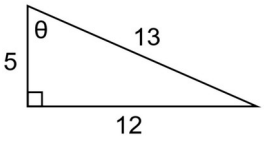
a. 

b. 

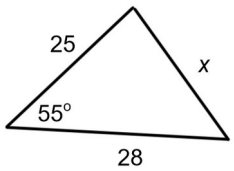
c. 

d. 

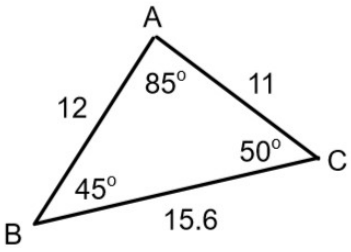
3. Which of the following ratios is **correct** for the triangle shown?
   a. $\sin\theta = \frac{12}{13}$ b. $\cos\theta = \frac{12}{13}$
   c. $\tan\theta = \frac{12}{13}$ d. $\tan\theta = \frac{5}{12}$



4. What rule should you use to directly solve for *x*?
   a. Cosine Law b. Sine Law
   c. Tangent Law d. Coleslaw



5. Which of the following is a correct demonstration of the Sine Law for the triangle, shown right?
   a. $\frac{15.6}{\sin 85} = \frac{11}{\sin 45}$ b. $\frac{12}{\sin 50} = \frac{11}{\sin 85}$
   c. $\frac{85}{\sin 15.6} = \frac{45}{\sin 11}$ d. $\frac{50}{\sin 12} = \frac{85}{\sin 11}$



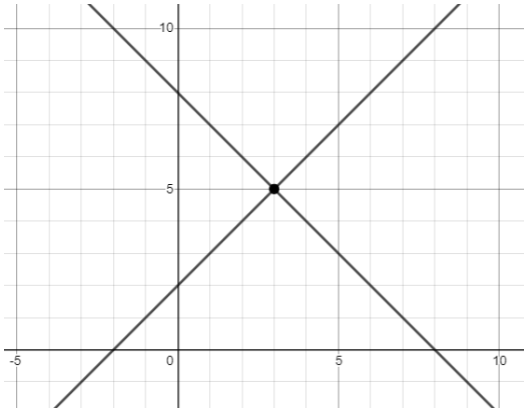
MPM 2D Exam Part 1 Name: _____

Mr. Kempe Monday, November 9th, 2020

6. Which of the following points is on the line $3x+2y=9$?

   a. (2, 1) b. (1, 3) c. (4.5, 0) d. (4, -1)

7. What is the **solution** of the system shown?



   a. (5, 3) b. (3, 5)

   c. (8, 8) d. (0, 2)

8. What is the **midpoint** of the points J(1, 4) and K(-1, 18)?

   a. (1, -14) b. (0, 11) c. (0.5, -5) d. (0, 13)

9. What is the distance between the points P(-3, 4) and Q(2, -8)?

   a. 4.12 b. 13 c. 12.04 d. 6.40

10. What is the radius of the circle given by $x^2+y^2=36$?

    a. 18 b. 6 c. 36 d. 1296

Bonus. What is the loudest sound we've heard in class this quadmester?

a. The Fire Alarm b. O Canada on the P.A. system

c. Seth's head slamming on the desk d. Andrew saying "it's too quiet in here!!"

MPM 2D Exam Part 1 Name: _____
Mr. Kempe Monday, November 9th, 2020

Part B: Definition Matching [10 marks]

For each definition, write the letter corresponding to the appropriate word from the work bank in the space beside it. (An example has been done for you.) There are (a lot) more words that definitions, so be careful!

Word Match	Definition
W	The point where the three medians of a triangle meet.
	Used to find the length of a line segment
	Corresponding angles are equal and corresponding sides are proportional
	From a table of values, these are constant in a linear relationship
	The point on a line segment that is equally distant from both endpoints
	A line from a vertex that is perpendicular to the opposite side; the “height” of a triangle
	Corresponding angles and sides are equal
	Two lines whose slopes are negative reciprocals of each other
	The point where the three perpendicular bisectors of a triangle meet.
	A line that is perpendicular to and passes through the midpoint of a line segment
	A relationship whose graph is a straight line

WORD BANK

A. Similar
B. Congruent
C. Sine
D. Cosine
E. Tangent
F. Sine Law
G. Cosine Law
H. Linear
I. First Differences
J. Linear System
K. Solution
L. Substitution
M. Elimination
N. Midpoint
O. Median
P. Distance Formula
Q. Parallel Lines
R. Perpendicular Lines
S. Perpendicular Bisector
T. Altitude
U. Circumcenter
V. Orthocenter
~~W. Centroid~~

MPM 2D Exam Part 1 Name: _____
Mr. Kempe Monday, November 9th, 2020

Part C: Problem Solving

Complete any 5 of the following 6 problems. Each problem is worth 4 marks.

1. A puddle sits 40m from the base of a tree. Gracie, who is 1.6m tall, can just see the top of the tree if she is standing 1m from the puddle. How tall is the tree?

MPM 2D Exam Part 1 Name: _____

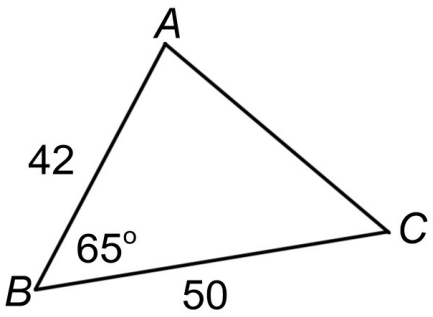
Mr. Kempe Monday, November 9th, 2020

2. Spider-Man is standing on the ground 50ft in front of an apartment building that is 230ft tall.
   a. At what angle of elevation must he fire his web-shooter to hit the edge of the roof?
   b. What length of webbing will be let out to reach the top of the roof?

MPM 2D Exam Part 1 Name: _____

Mr. Kempe Monday, November 9th, 2020

3. Solve the following triangle:

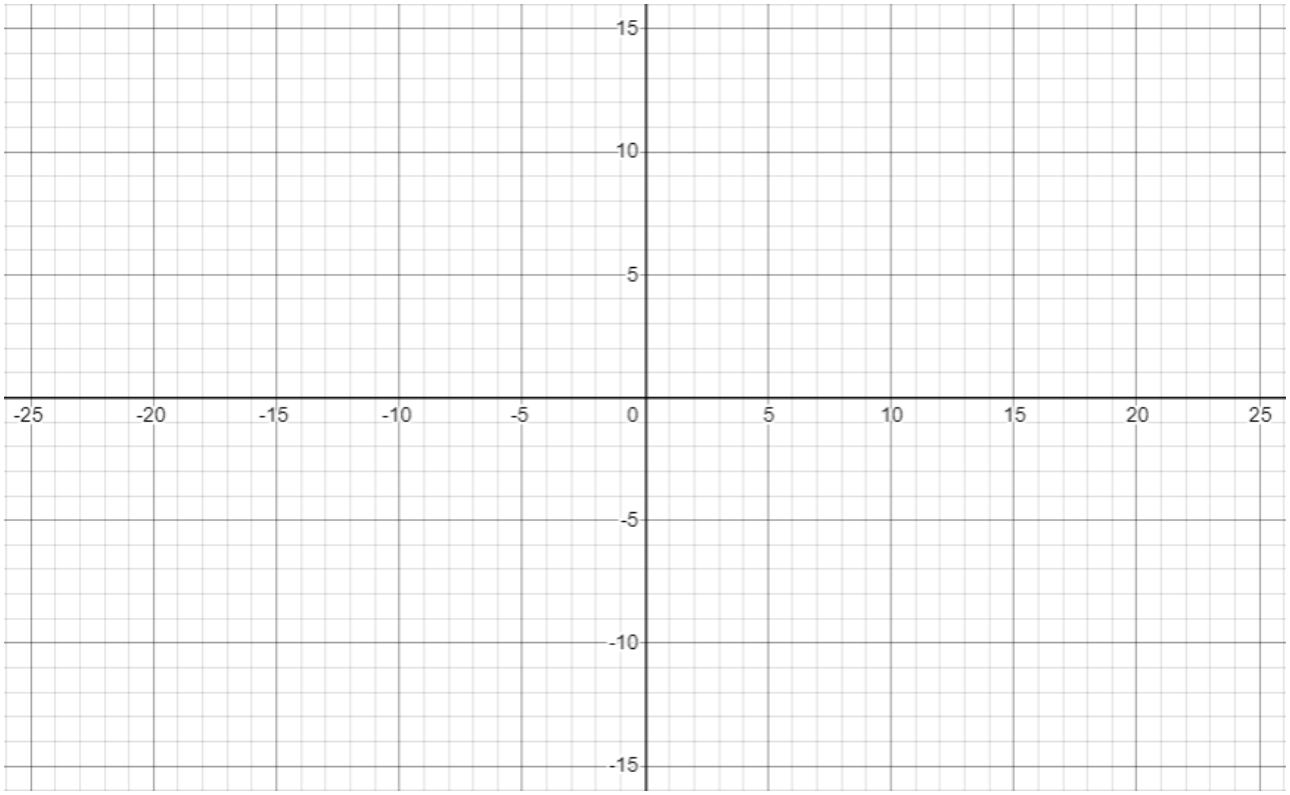


MPM 2D Exam Part 1 Name: _____

Mr. Kempe Monday, November 9th, 2020

4. Solve the following system of linear equations. (Your choice of method – graphing, substitution, or elimination.)

$2x+3y=6$
$x-4y=25$



MPM 2D Exam Part 1 Name: _____

Mr. Kempe Monday, November 9th, 2020

5. For Grade 8 orientation day, the school orders pepperoni pizzas ($8 each) and vegetarian pizzas ($10 each). Fifty pizzas are ordered for a total cost of $427.

   a. Write a system of linear equations that represent this situation.

   b. How many of each type of pizza were ordered?

MPM 2D Exam Part 1 Name: _____
Mr. Kempe Monday, November 9th, 2020

6. A circle passes through the points A(-4,-3), B(4, 3), and C(5,0).

   a. Determine the equation of the circle.

   b. Show that triangle ABC is a right-angled triangle.