MPM 2D
Mr. Kempe

Name: _____
Date: _____

Practice Test #4 – Similar Triangles and Trigonometry

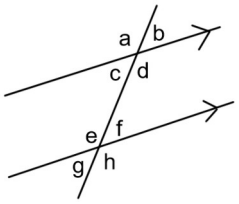
[40 marks]

Part A: Multiple Choice [K/U, 10 marks]

1. If you were to solve the proportion $\frac{x}{10}=\frac{16}{25}$ by *cross multiplying*, what would the next line in your solution look like?
   a. 25x = 160 b. 10x = 400 c. 16x = 250 d. x = 4000

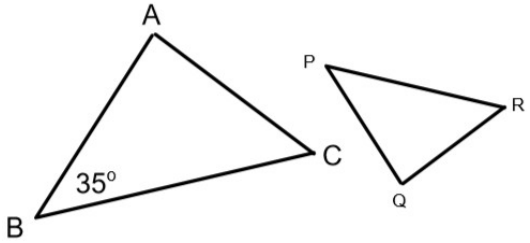
2. In the Pythagorean Theorem ($a^2 + b^2 = c^2$) which variable is always the hypotenuse?
   a. a b. b c. c d. d

3. In the diagram, shown right, two lines are parallel. Which of the following statements is **false**?
   a. ∠c = ∠b b. ∠a = ∠e
   c. ∠a = ∠h d. ∠d = ∠f



4. If △ABC ~ △DEF, which of the following statements is **not** true?
   a. ∠A = ∠D b. ∠C = ∠F c. $\frac{AB}{DE}=\frac{BC}{EF}$ d. $\frac{AC}{DF}=\frac{BC}{DE}$

5. In the diagram, △ABC ~ △QPR. Which of the following is **true**?
   a. P = 35° b. Q = 35°
   c. R = 35° d. None of the above



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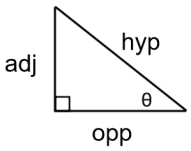
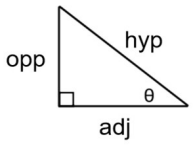
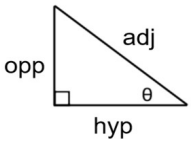
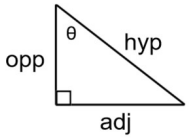
6. Which of the following right-triangles has been correctly labeled with respect to θ?

a. 

b. 

c. 

d. 

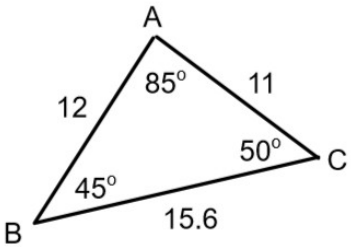
7. sin 35 = …

a. 0.5736 b. 0.4282 c. 0.5225 d. Error!

8. Which of the following trigonometric ratios is **incorrect**?

a. $\sin\theta = \frac{opp}{hyp}$ b. $\cos\theta = \frac{adj}{hyp}$ c. $\tan\theta = \frac{adj}{opp}$ d. None of the above

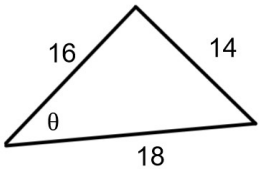
9. Which of the following is a correct demonstration of the Sine Law for the triangle, shown right?



a. $\frac{12}{\sin 50} = \frac{11}{\sin 85}$ b. $\frac{15.6}{\sin 85} = \frac{11}{\sin 45}$

c. $\frac{50}{\sin 12} = \frac{85}{\sin 11}$ d. $\frac{85}{\sin 15.6} = \frac{45}{\sin 11}$

10. In the triangle, shown left, what rule will allow you to **directly** solve for θ?



a. Pythagorean Theorem b. Sine Law

c. $\cos\theta = \frac{adj}{hyp}$ d. Cosine Law

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Part B: Short Answer [C, 10 marks]

1. Describe **two ways** you can check if a pair of triangles are **similar**. [2 marks]

2. Define **congruence**. [2 marks]

3. Define **angle of inclination**, and draw an example. [2 marks]

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4. Can $\sin\theta = \frac{17}{8}$? Explain why or why not. [2 marks]

5. Draw an example of a situation that requires **sine law** to solve it. [2 marks]

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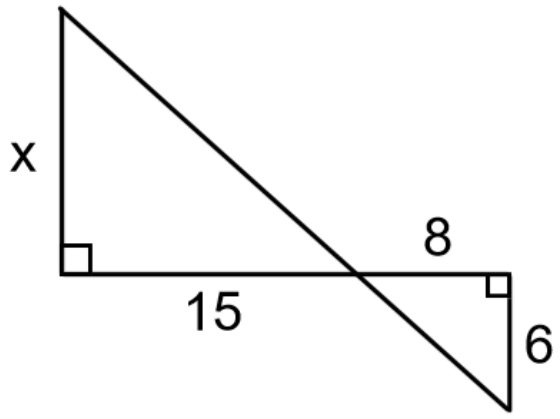
Part C: Problem Solving [ATIPS, 20 marks]

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

1. For the diagram shown:
   a. Show that the triangles are similar.
   b. Determine the length of *x*.



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2. A dog named Fufu is out for walk on a sunny morning when she encounters a giraffe that has escaped from the zoo. Fufu is 50cm tall and casts a shadow that is 120cm long. If the shadow cast by the giraffe is 960cm long, how tall is the giraffe?

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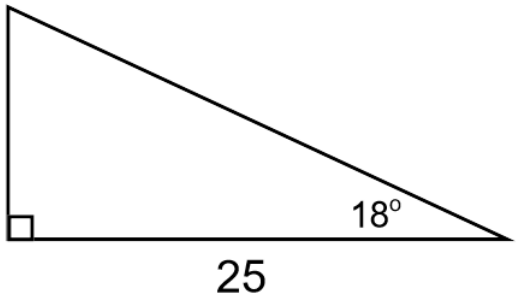
3. Solve the triangle.



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4. A hiker is standing 25m from the base of a cliff, and estimates that the angle of elevation to the top of the cliff is 86°. Determine the height of the cliff.

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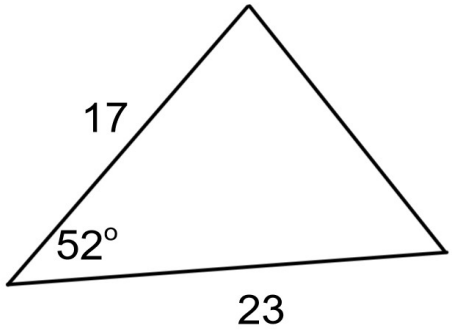
5. Solve the triangle.



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6. Garfield and Jon are standing 150ft apart when Garfield kicks Odie into the air at an angle of 45°. If the angle of inclination from Jon to Odie is 72°, how high above the ground is Odie?

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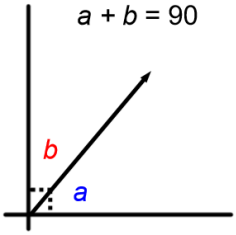
Formula Sheet

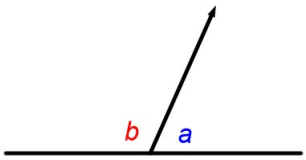
Complimentary

$a + b = 90$

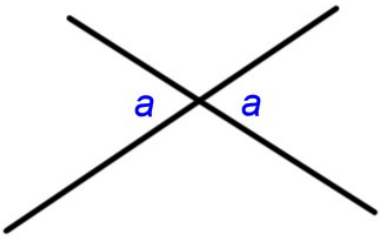


Supplementary

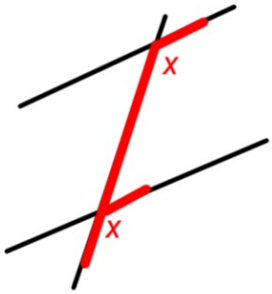
$a + b = 180$



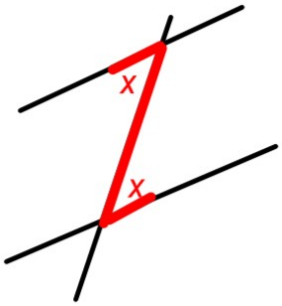
Opposite



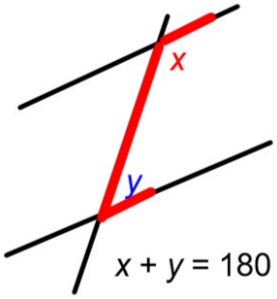
F-pattern



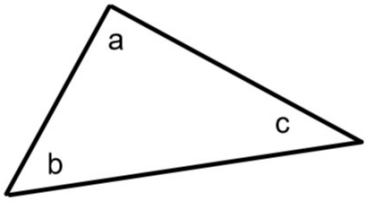
Z-pattern



C-pattern

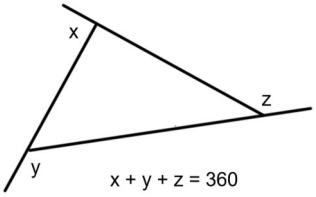


Angle-Sum-Triangle Theorem

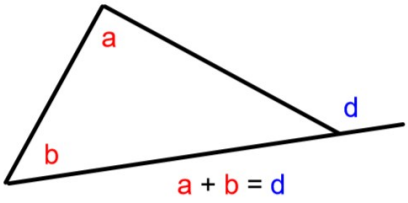


a + b + c = 180

Sum of Exterior Angles



Exterior Angle Theorem



Pythagorean Theorem: $a^2+b^2=c^2$

Primary Trigonometric Ratios: $\sin\theta=\frac{opp}{hyp}$ $\cos\theta=\frac{adj}{hyp}$ $\tan\theta=\frac{opp}{adj}$

Sine Law: $\frac{\sin A}{a}=\frac{\sin B}{b}=\frac{\sin C}{c}$ or $\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$

Cosine Law: $c^2=a^2+b^2-2ab\cos C$