

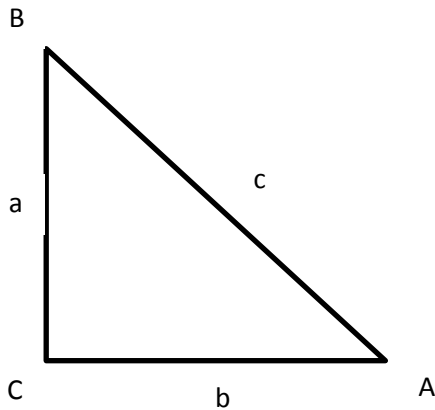
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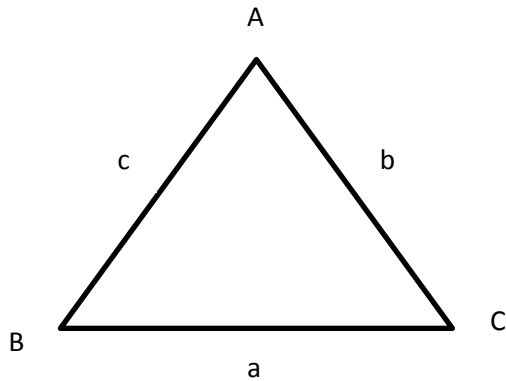
Dangelmaier

Trig and Triangle Review and Vector Word Problems – Show all work, including diagrams. No credit will be given on work only



*Directions for #1-4:* The angles of the right triangle are labeled A, B, and C, where  $C = 90^\circ$ . The sides are labeled a, b, and c. Solve for the unknowns.

1.  $a = 12$   $b = 5$   $c =$  \_\_\_\_\_  $A =$  \_\_\_\_\_  $B =$  \_\_\_\_\_
2.  $a = 37$   $b = 6$   $c =$  \_\_\_\_\_  $A =$  \_\_\_\_\_  $B =$  \_\_\_\_\_
3.  $a =$  \_\_\_\_\_  $b = 17.5$   $c = 24.25$   $A =$  \_\_\_\_\_  $B =$  \_\_\_\_\_
4.  $a = 6$   $b = 9.5$   $c =$  \_\_\_\_\_  $A =$  \_\_\_\_\_  $B =$  \_\_\_\_\_



Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

5.  $A = 65^\circ$   $B = 35^\circ$   $C =$  \_\_\_\_\_  $a = 16$   $b =$  \_\_\_\_\_  $c =$  \_\_\_\_\_
6.  $A =$  \_\_\_\_\_  $B = 45^\circ$   $C = 85^\circ$   $a =$  \_\_\_\_\_  $b =$  \_\_\_\_\_  $c = 36$

7. Resolve the following vectors:
  - a. 110 km/h  $27^\circ$  north of the horizontal
  - b.  $5 \text{ m/s}^2$   $45^\circ$  north of west
  - c. 50 N  $60^\circ$  south of east
  - d. 76 m  $35^\circ$  south of west
8. A truck drives up a 20 inclined hill with a speed of 30 m/s, what is his speed in the x axis and y axis?
9. A skier is racing down a  $24^\circ$  slope with a speed of 37 m/s. What is his velocity in the x and y?
10. How fast must a cheetah run to stay beneath a small propeller plane that is moving 69 km/h at an angle of  $25^\circ$  to the horizontal?
11. An airplane pilot is somewhere between Houston and Austin where the angle between the 2 beacons (of Houston and Austin) is  $36^\circ$ . The distance between Austin and Houston is 389 km. The airplane is 245 km from Houston. How far away is the airplane from Austin?
12. A person is kayaking in the ocean at 5.6 m/s  $75^\circ$  to the horizon when he experiences a current of 3.8 m/s  $45^\circ$  south of west. What is the speed and direction of his kayak?
13. A hiker travels 6 km  $60^\circ$  north of west and then turns and travels 10 km  $55^\circ$  north of east. What is displacement?