

**Find the length of the specified side:**

Side  $r$  in  $\triangle RPM$  if  $p=4\text{cm}$ ,  $m=5\text{cm}$ , and  $R=51^\circ$

$$r = 3.98$$

2. Side  $d$  in  $\triangle CDE$  if  $c=7\text{in}$ ,  $e=9\text{in}$ , and  $D=34^\circ$

$$d = 5.05$$

3. Side  $r$  in  $\triangle PQR$  if  $p=3\text{ft}$ ,  $q=2\text{ft}$ , and  $R=138^\circ$

$$r = 4.68$$

4. Side  $k$  in  $\triangle HJK$  if  $h=8\text{m}$ ,  $j=6\text{m}$ , and  $K=172^\circ$

$$k = 13.97$$

**Find the measure of the specified angle.**

5. Angle  $U$  in  $\triangle UMP$  if  $u=2\text{in}$ ,  $m=3\text{in}$ , and  $p=4\text{in}$

$$U = 28.96^\circ$$

6. Angle  $G$  in  $\triangle MEG$  if  $m=5\text{cm}$ ,  $e=6\text{cm}$ , and  $g=8\text{cm}$

$$G = 92.87^\circ$$

7. Angle  $T$  in  $\triangle BAT$  if  $b=6\text{km}$ ,  $a=7\text{km}$ , and  $t=12\text{km}$

$$T = 134.62^\circ$$

8. Angle  $E$  in  $\triangle PEG$  if  $p=12\text{ft}$ ,  $e=22\text{ft}$ , and  $g=16\text{ft}$

$$E = 102.64^\circ$$

Angle  $Y$  in  $\triangle GYP$  if  $g=7\text{yd}$ ,  $y=5\text{yd}$ , and  $p=13\text{yd}$

$$Y = 43.05^\circ$$

10. Angle  $N$  in  $\triangle GON$  if  $g=6\text{mm}$ ,  $o=3\text{mm}$ , and  $n=12\text{mm}$

$$N = \text{no solution}; \text{ not a } \triangle \quad 6+3 \nless 12$$

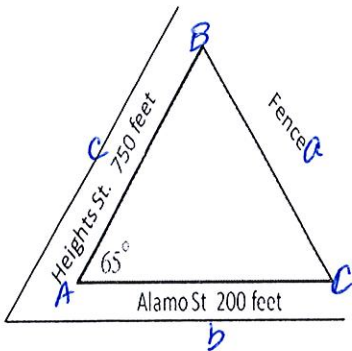
11. Angle  $O$  in  $\triangle NOD$  if  $n=1475\text{yd}$ ,  $o=2053\text{yd}$ , and  $d=1428\text{yd}$

$$O = 90^\circ$$

12. Angle  $Q$  in  $\triangle SQR$  if  $s=1504\text{cm}$ ,  $q=2465\text{cm}$ , and  $r=1953\text{cm}$

$$Q = 90^\circ$$

13. Fence Problem: Gus works for a fence company. He has the job of pricing a fence to go across a triangular lot at the corner of Alamo and Heights Streets, as shown. The streets intersect at a  $65^\circ$  angle. The lot extends  $200\text{ft}$  from the intersection along Alamo and  $750\text{ft}$  from the intersection along Heights.



A. How long will the fence be?

$$a^2 = 200^2 + 750^2 - 2(200)(750)\cos 65^\circ$$

$$689.72 \text{ ft}$$

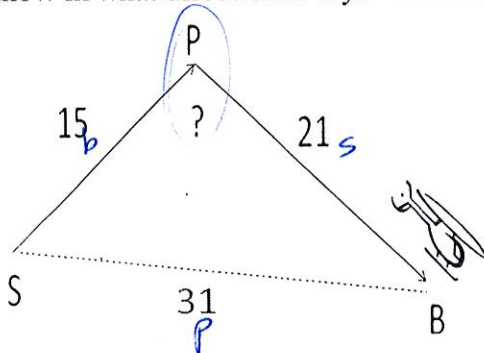
B. How much will it cost his company to build it if fencing costs  $3.75/\text{ft}$ ?

$$689.72 \times 3.75 = \$2,586.45$$

C. What price should he quote if they want to make 35% profit?

$$2,586.45 \times 1.35 = \$3,491.71$$

14. Flight Path Problem: Miguel flies a helicopter to drop supplies to stranded flood victims. He will fly from the supply depot,  $S$ , to the drop point  $P$ . Then he will return to the helicopter's base at  $B$ , shown in figure. The drop point is  $15$  miles from the supply depot. The base is  $21$  miles from the drop point. It is  $31$  miles between the supply depot and the base. Because the return flight to the base will be made after dark, Miguel wants to know in what direction to fly. What is the angle between the two paths at the drop point?



$$31^2 = 15^2 + 21^2 - 2(15)(21)\cos P$$

$$295 = -630\cos P$$

$$-.468 = \cos P$$

$$117.92^\circ = P$$