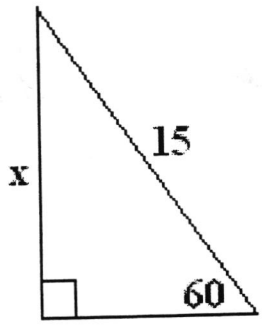
STATION 1 BASICS

Find the indicated part of each of the following triangles

1.



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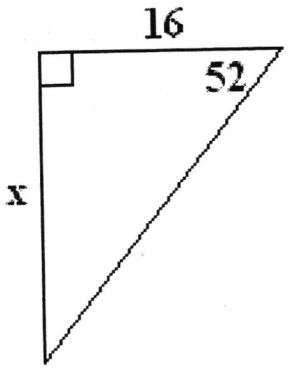

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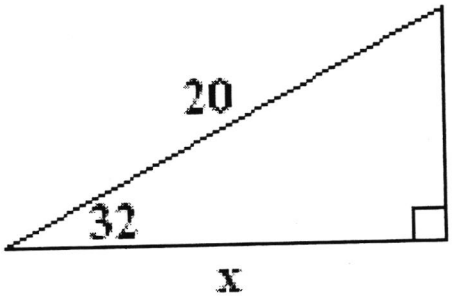

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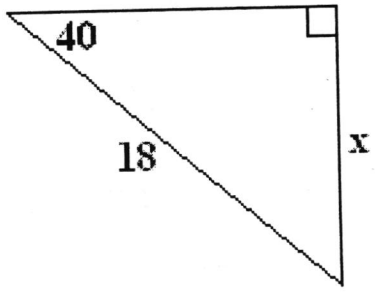

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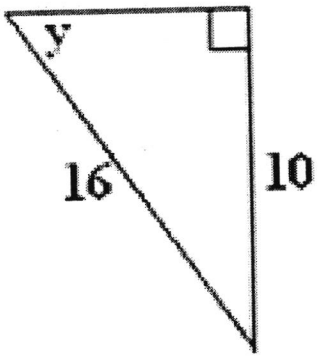

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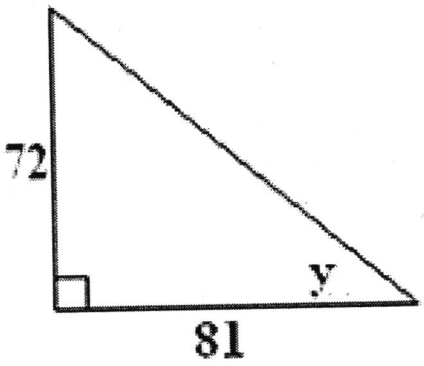


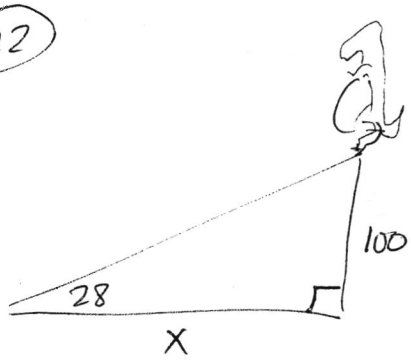
(20) $\tan 29 = \frac{x}{60}$

$x \approx 33.3 ft$

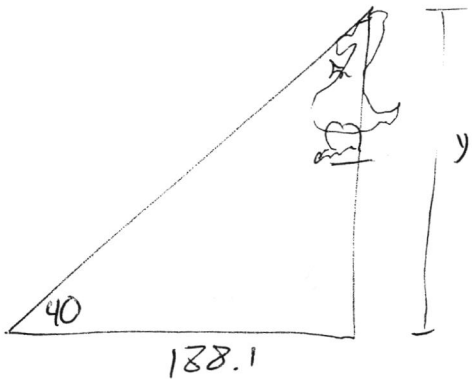
(21) $\tan 37 = \frac{x}{20}$

$x \approx 15.1 in$

(22)



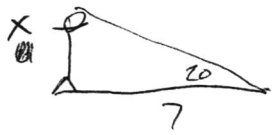
$\tan 28 = \frac{100}{x} \rightarrow x = 188.1$



$\tan 40 = \frac{y}{188.1} \rightarrow y = 158.3$

$158.3 - 100 = 58.3 ft$

(23)



$\tan 20 = \frac{x}{7} \rightarrow x = 2.5 ft$

STATION 2 Solving Triangles

SOLVE each of the following triangles:

7. $A = 90^0$
   $B = 53^0$
   $C =$
   $a = 25$
   $b =$
   $c =$

8. $A =$
   $B = 90^0$
   $C =$
   $a = 12$
   $b =$
   $c = 16$

① $\sin 60 = \frac{x}{15}$

$x \approx 13$

② $\tan 52 = \frac{x}{16}$

$x \approx 20.5$

③ $\cos 32 = \frac{x}{20}$

$x \approx 17$

④ $\sin 40 = \frac{x}{18}$

$x \approx 11.6$

⑤ $\sin y = \frac{10}{16}$

$y \approx 38.7°$

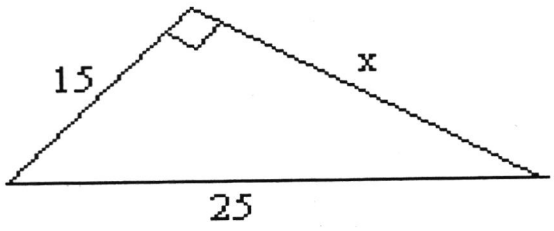
⑥ $\tan y = \frac{72}{81}$

$y \approx 41.6°$

STATION 3 Pythagorean Theorem

Use the Pythagorean Thm to find the missing side in each triangle:

9.



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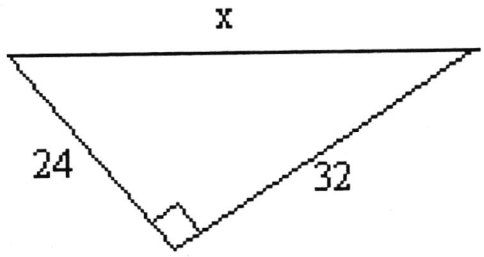
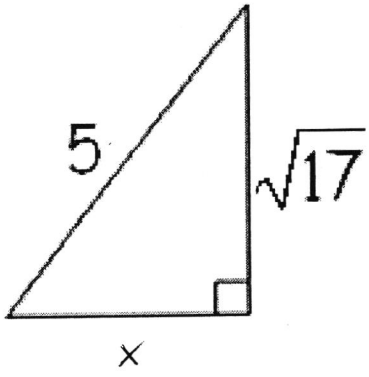


11.



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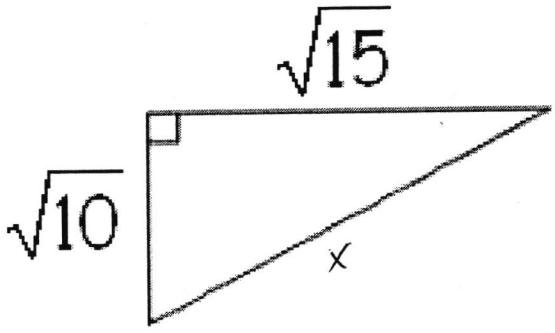
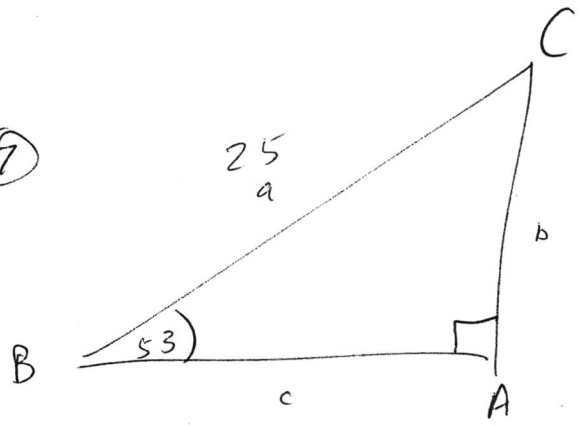


13. A baseball diamond is a square with sides of 90 feet. What is the shortest distance, to the *nearest tenth* of a foot, between first base and third base?

(7)

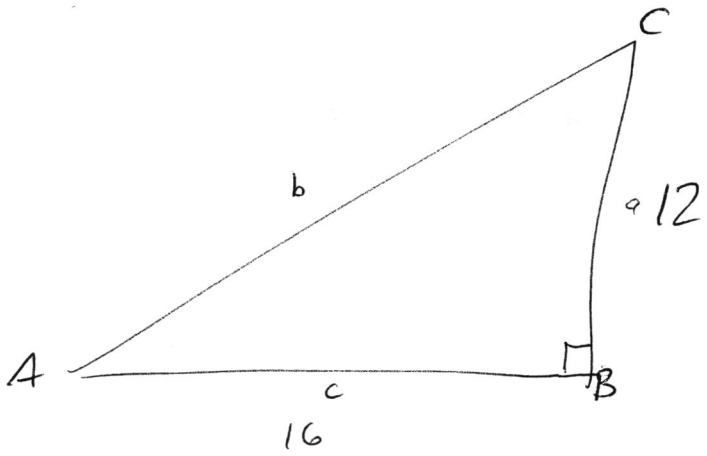


angle C: $180 - 90 - 53 = 37°$

side b: $\sin 53 = \frac{b}{25} \rightarrow b \approx 20°$

side c: $\cos 53 = \frac{c}{25} \rightarrow c \approx 15°$

(8)



b (by Pythagorean) $\rightarrow 20$

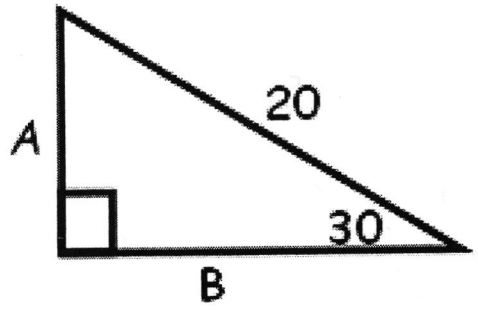
angle A $\tan^{-1}\left(\frac{12}{16}\right) \rightarrow m\angle A \approx 36.9°$

angle B $\tan^{-1}\left(\frac{16}{12}\right) \rightarrow m\angle B \quad 53.1°$

STATION 4 SPECIAL TRIANGLES

Use the 30-60-90 and 45-4590 triangle to find the missing sides in each of the following: (exact answers only)

14.



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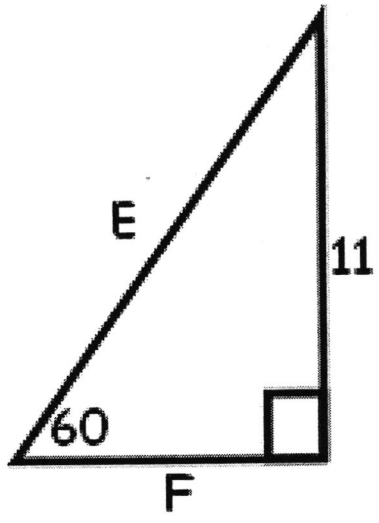

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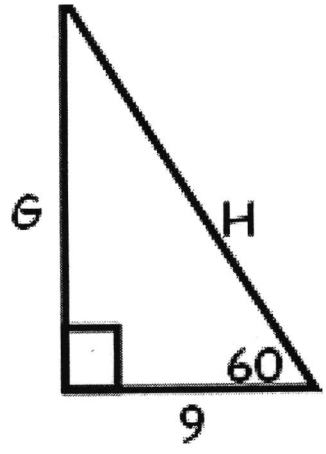

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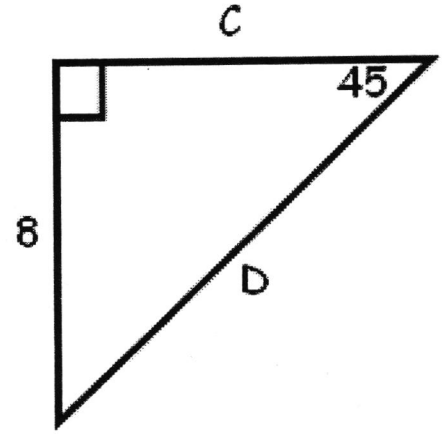

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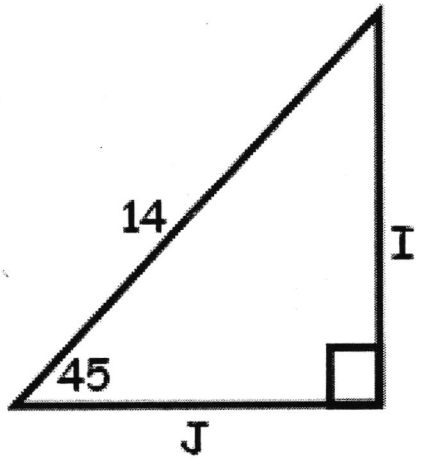

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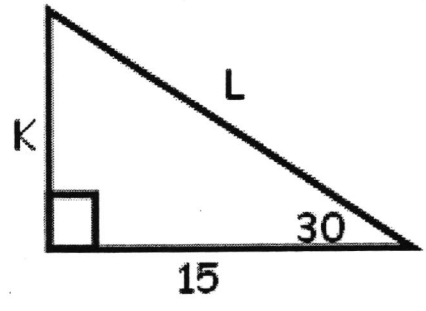


(9) $15^2 + x^2 = 25^2$

$x = 20$

(10) $24^2 + 32^2 = x^2$

$40 = x$

(11) $x^2 + \sqrt{17}^2 = 5^2$

$x^2 + 17 = 25$

$x^2 = 8$

$x = 2\sqrt{2}$

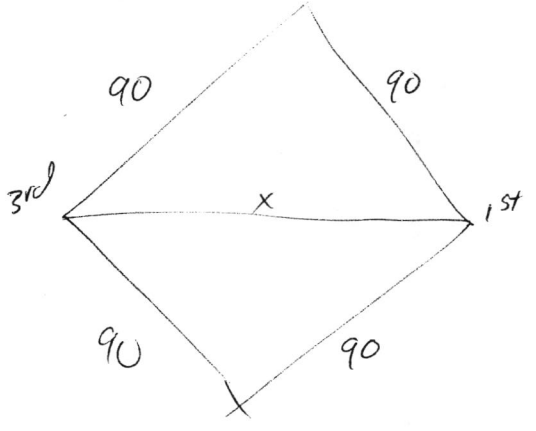
(12) $\sqrt{10}^2 + \sqrt{15}^2 = x^2$

$10 + 15 = x^2$

$25 = x^2$

$5 = x$

(13)

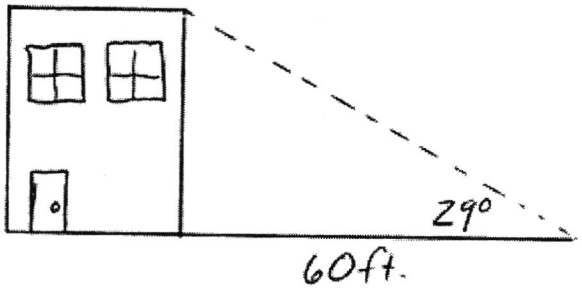


$\rightarrow x = 90\sqrt{2}$ or 127.3 ft

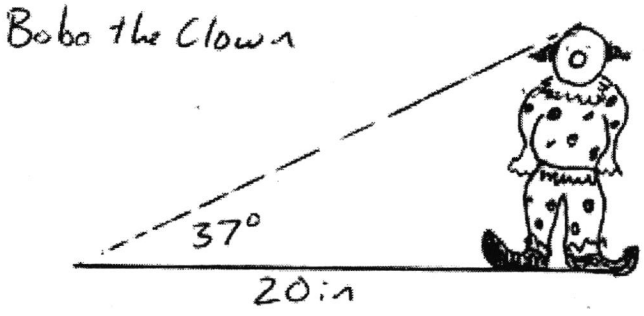
STATION 5 WORD PROBLEMS

Find the height of ...

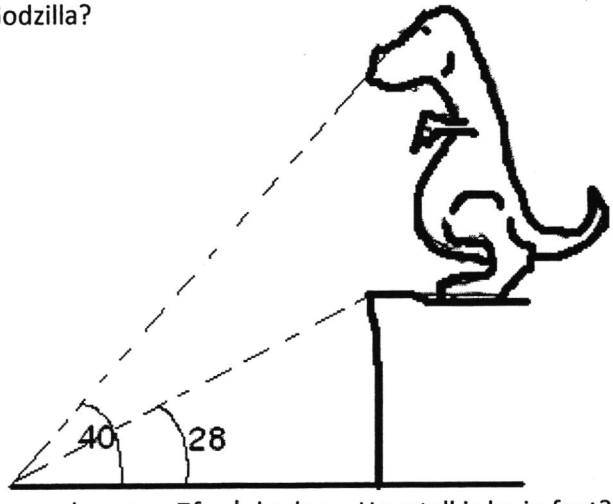
20. Building



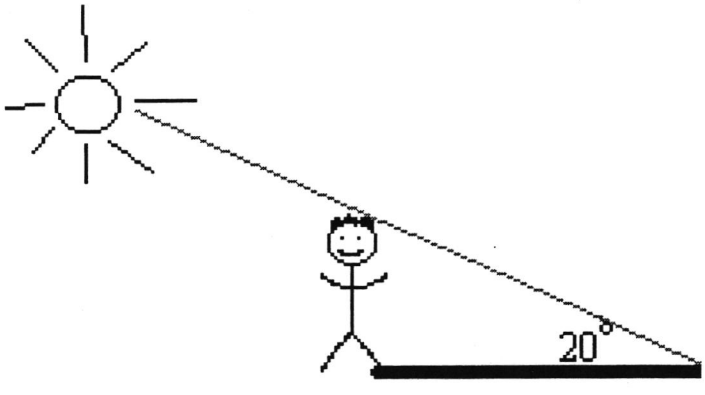
21.



22. Godzilla is standing on the top of a 100 foot tall cliff. The angle of elevation to the top of the cliff is 28 degrees. The angle of elevation to the top of Godzilla is 40 degrees. How tall is Godzilla?



23. 10. The angle of elevation to the sun is 20^0. A man standing in a park casts a 7foot shadow. How tall is he in feet?



(14) $A = 10$

$B = 10\sqrt{3}$

(15) $E = \frac{22\sqrt{3}}{3}$

$F = \frac{11\sqrt{3}}{3}$

(16) $G = 9\sqrt{3}$

$H = 18$

(17) $C = 8$

$D = 8\sqrt{2}$

(18) $I = 7\sqrt{2}$

$J = 7\sqrt{2}$

(19) $K = 5\sqrt{3}$

$L = 10\sqrt{3}$