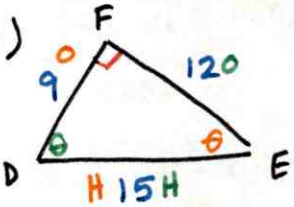
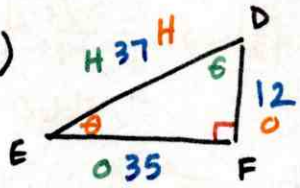
7.6

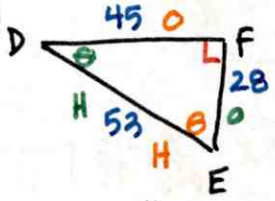
1) The sine ratio compares the length of the opposite leg to the length of the hypotenuse.

3) 

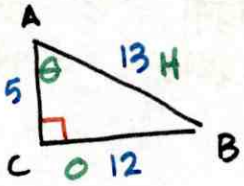
$\sin D = \frac{12}{15} = \frac{4}{5} = .8$ $\sin E = \frac{9}{15} = \frac{3}{5} = .6$

4) 

$\sin D = \frac{35}{37} = .9459$ $\sin E = \frac{12}{37} = .3243$

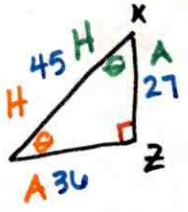
5) 

$\sin D = \frac{28}{53} = .5283$ $\sin E = \frac{45}{53} = .8491$

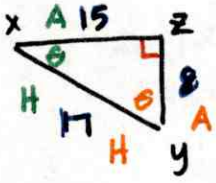
6) 

$\sin A = \frac{5}{13}$ (A, H)

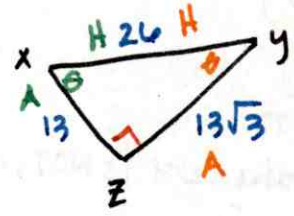
$\boxed{\sin A = \frac{12}{13}}$ (O, H)

7) 

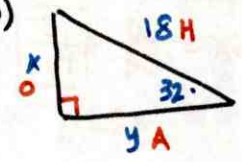
$\cos X = \frac{27}{45} = \frac{3}{5} = .6$ $\cos Y = \frac{36}{45} = \frac{4}{5} = .8$

8) 

$\cos X = \frac{15}{17} = .8824$ $\cos Y = \frac{8}{17} = .4706$

9) 

$\cos X = \frac{13}{26} = \frac{1}{2} = .5$ $\cos Y = \frac{13\sqrt{3}}{26} = \frac{\sqrt{3}}{2} = .8660$

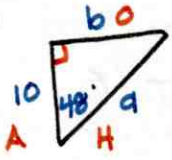
10) 

$\sin(32) = \frac{x}{18}$

$\boxed{x = 9.5}$

$\cos(32) = \frac{y}{18}$

$\boxed{y = 15.3}$

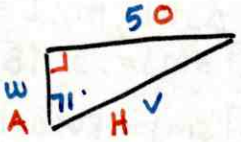
11) 

$\cos(48) = \frac{10}{a}$

$\boxed{a = 14.9}$

$\sin(48) = \frac{b}{14.9}$

$\boxed{b = 11.1}$

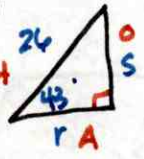
12) 

$\sin(71) = \frac{5}{v}$

$\boxed{v = 5.3}$

$\cos(71) = \frac{w}{5.3}$

$\boxed{w = 1.7}$

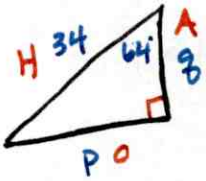
13) 

$\cos(43) = \frac{r}{26}$

$\boxed{r = 19}$

$\sin(43) = \frac{s}{26}$

$\boxed{s = 17.7}$

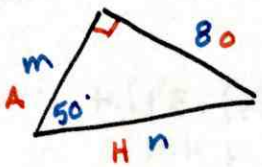
14) 

$\sin(64) = \frac{p}{34}$

$\boxed{p = 30.6}$

$\cos(64) = \frac{9}{34}$

$\boxed{9 = 14.9}$

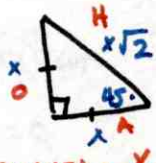
15) 

$\sin(50) = \frac{8}{n}$

$\boxed{n = 10.4}$

$\cos(50) = \frac{m}{10.4}$

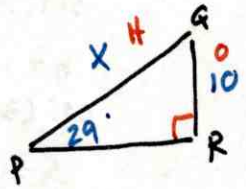
$\boxed{m = 6.7}$

16) 

$\sin(45) = \frac{x}{x\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \sqrt{2}/2$

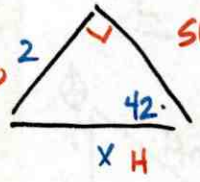
$\cos(45) = \frac{x}{x\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \sqrt{2}/2$

17) must have a rt △
an acute angle
opposite / hypotenuse (sine)
adjacent / hypotenuse (cosine)

18) 

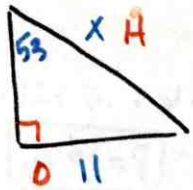
$\sin(29) = \frac{10}{x}$

c. $\boxed{x = \frac{10}{\sin(29)}}$

19) 

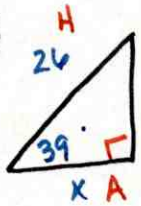
$\sin(42) = \frac{2}{x}$

$\boxed{x = 3}$

20) 

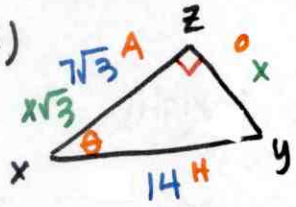
$\sin(53) = \frac{11}{x}$

$\boxed{x = 13.8}$

21) 

$\cos(39) = \frac{x}{26}$

$\boxed{x = 20.2}$

22) 

$x = 7$

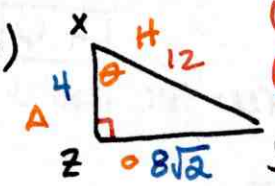
$x\sqrt{3} = 7\sqrt{3}$

$2x = 14$

$\sin x = \frac{7}{14} = \frac{1}{2}$ $\cos x = \frac{7\sqrt{3}}{14} = \frac{\sqrt{3}}{2}$

$= .5$ $= .8660$

$\boxed{zy = 7}$

23) 

$(xy)^2 = 4^2 + (8\sqrt{2})^2$

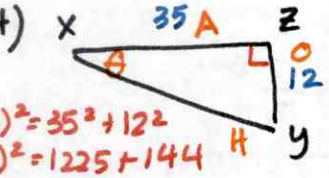
$(xy)^2 = 16 + 128$

$(xy)^2 = 144$

$\boxed{xy = 12}$

$\sin x = \frac{8\sqrt{2}}{12} = \frac{2\sqrt{2}}{3}$ $\cos x = \frac{4}{12} = \frac{1}{3}$

$= .9428$ $= .3333$

24) 

$\sin x = \frac{12}{37}$ $\cos x = \frac{35}{37}$

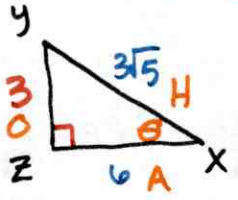
$= .3243$ $= .9459$

$(xy)^2 = 35^2 + 12^2$

$(xy)^2 = 1225 + 144$

$(xy)^2 = 1369$

$\boxed{xy = 37}$

25) 

$(yz)^2 = (3\sqrt{5})^2 - 6^2$

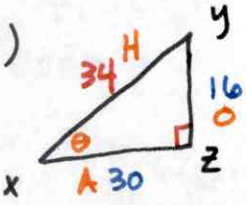
$(yz)^2 = 45 - 36$

$yz^2 = 9$

$\boxed{yz = 3}$

$\sin x = \frac{3}{3\sqrt{5}} = \frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5}$ $\cos x = \frac{6}{3\sqrt{5}} = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$

$= .4472$ $= .8944$

26) 

$(xy)^2 = 30^2 + 16^2$

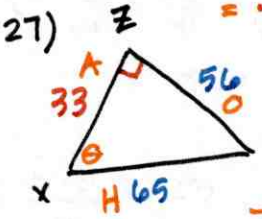
$(xy)^2 = 900 + 256$

$(xy)^2 = 1156$

$\boxed{xy = 34}$

$\sin x = \frac{16}{34} = \frac{8}{17}$ $\cos x = \frac{30}{34} = \frac{15}{17}$

$= .4706$ $= .8824$

27) 

$(xz)^2 = 65^2 - 56^2$

$(xz)^2 = 4225 - 3136$

$(xz)^2 = 1089$

$\boxed{xz = 33}$

$\sin x = \frac{56}{65}$ $\cos x = \frac{33}{65}$

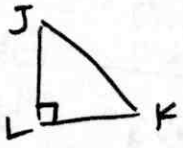
$= .8615$ $= .5077$

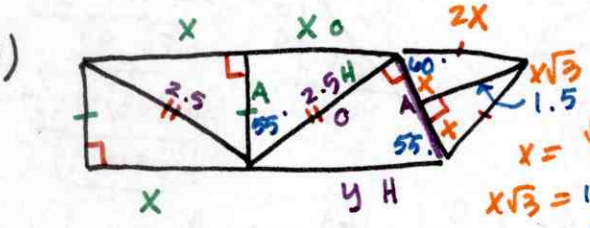
28) you will find out today!

29) In ΔJKL, $m\angle L = 90°$. which statement is NOT true?

A $\sin J = .5$ B $\sin J = .1071$

C $\sin J = .8660$ D $\sin J = 1.1$ ✓



30) 

$\cos(55) = \frac{\sqrt{3}}{y}$ $\tan(55) = \frac{O}{\sqrt{3}}$

$y = 3$ $O = 2.5$

$\sin(55) = \frac{x}{2.5}$ $\cos(55) = \frac{A}{2.5}$

$x = 2$ $A = 1.4$

$x = \frac{\sqrt{3}}{2}$

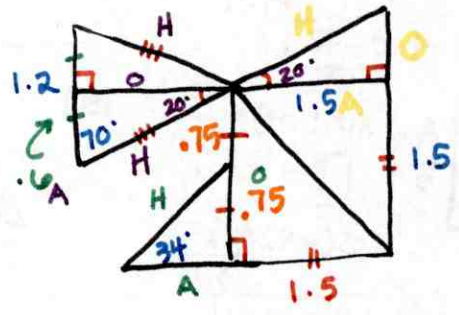
$x\sqrt{3} = 1.5 \rightarrow \left(\frac{2}{2}\right)$

$2x = \sqrt{3}$

$P = 2(2) + 2(\sqrt{3}) + 3 + 1.4$

$6 + 2\sqrt{3} + 4.4$

$\boxed{P = 13.8}$ about 14

31) 

$\sin(34) = \frac{.75}{H}$ $\cos(70) = \frac{.6}{H}$

$H = 1.3$ $H = 1.8$

$\tan(34) = \frac{.75}{A}$ $\cos(20) = \frac{1.5}{H}$

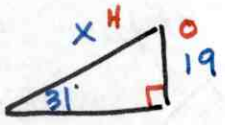
$A = 1.1$ $H = 1.6$

$\tan(20) = \frac{O}{1.5}$

$O = .5$

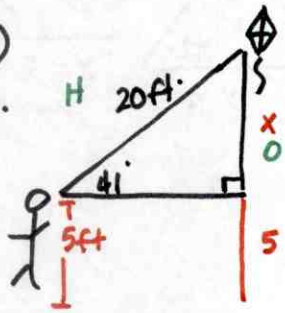
$P = 1.2 + 2(1.8) + 1.6 + .5 + 2(1.5) + 1.1 + 1.3 + .75$

$\boxed{P = 13.1}$

33) 

$\sin(31) = \frac{19}{x}$

$\boxed{x = 36.9}$

35) a. 

b) $\sin(41) = \frac{x}{20}$

$x = 13.1$

Height of kite $= 13.1 + 5$

$= 18.1$ ft.

must add the height of the spool