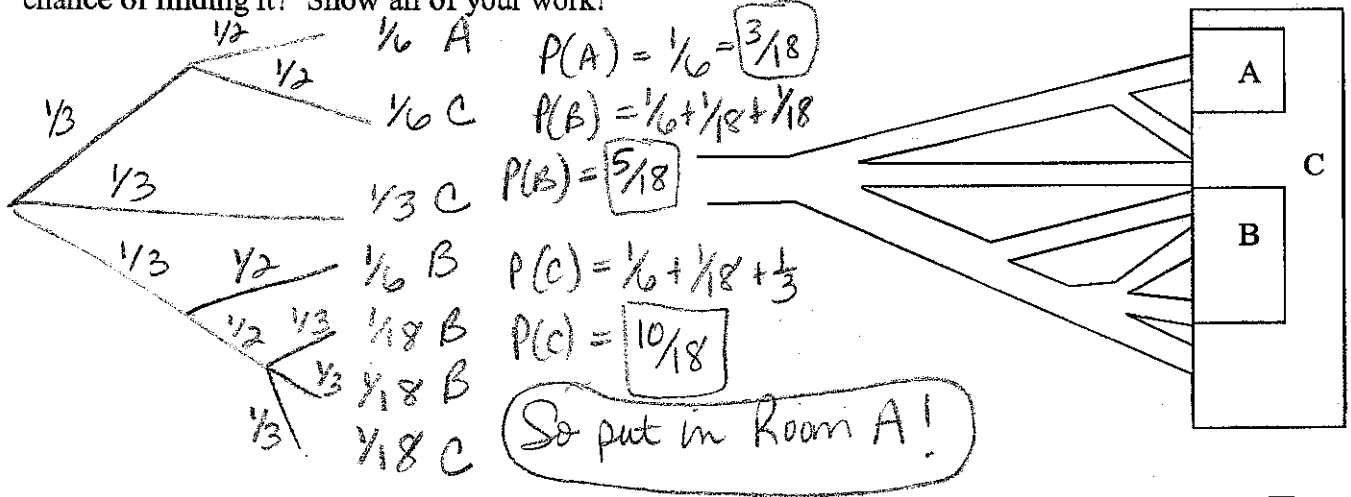
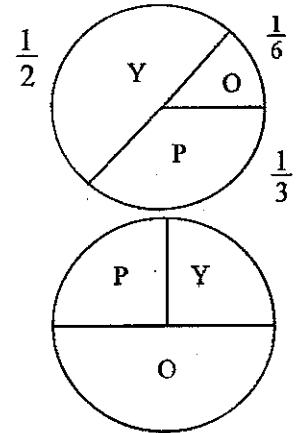


- 1) Boris the rat, Romeo's cousin, is trying to find food in the maze shown below. Boris is equally likely to take any path when coming to an intersection. In what room should the cheese be stored to give Boris the lowest chance of finding it? Show all of your work!



- 2) A game is played by spinning two spinners. If the colors match, the player wins. What is the probability that a player wins? CLEARLY demonstrate how you are solving the problem. (O = orange, P = purple, Y = yellow)



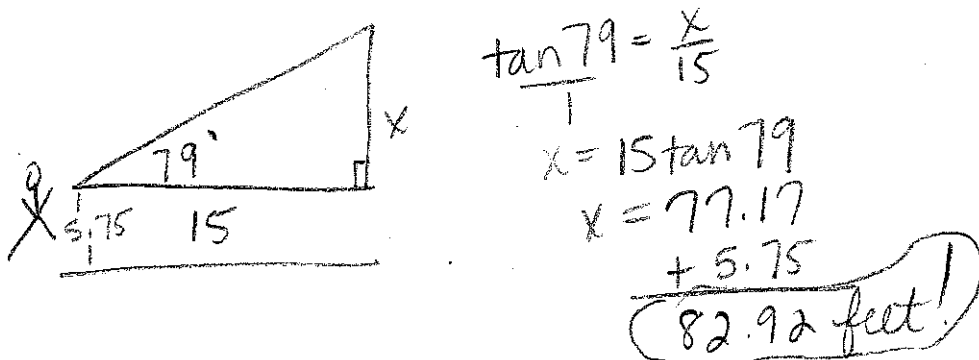
	Top		
	Y (1/2)	O (1/6)	P (1/3)
Bottom			
P (1/2)	1/8	1/24	1/12
Y (1/2)	1/8	1/24	1/12
O (1/2)	1/4	1/12	1/6

$P(\text{match}) = \frac{1}{8} + \frac{1}{12} + \frac{1}{12}$
 $P(\text{match}) = \frac{7}{24}$

- 3) George, an avid movie watcher, has his movie collection organized by genre and rating. 25% of his movies are comedies, 35% are action, 10% are romantic, and 30% are drama. 55% of his movies are rated PG-13, 20% are rated PG, 20% are rated G and 5% are rated R. What is the probability that George watches an action movie and a movie rated PG?

$0.35 \times 0.20 = 0.07 \text{ or } 7\%$

- 4) Mark wants to find the height of a power line outside his home. Using his clinometer, he measures the slope angle from 15 feet away base of the tree and gets an angle of 79° . If Mark's eye level is 5.75 feet above the ground, how tall is the power line? Draw a picture.

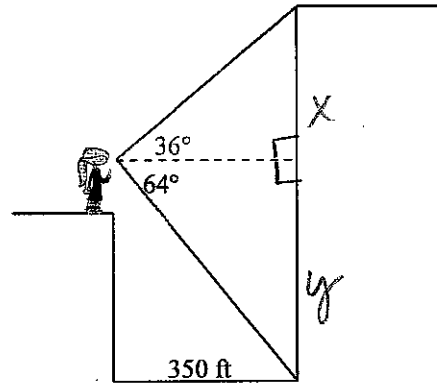


5) Mallory is standing on top of an apartment building in New York City. She knows that her apartment building is exactly 350 feet away from the Macy's store. Wanting to know the height of Macy's, Mallory measures the angle of elevation to the top of the store from her position and finds it is 36° . When she measures the angle of depression to the base of the store, she finds that it is 64° . Using this information, find the height of Macy's.

$$\tan 36 = \frac{x}{350} \quad \tan 64 = \frac{y}{350}$$

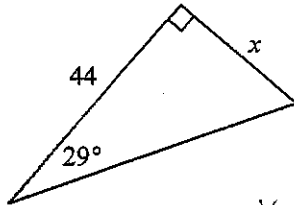
$$x = 254.3' \quad y = 717.6$$

$$\text{So } 254.3 + 717.6 = 971.9 \text{ ft.}$$



6) Find the value of x for each triangle below.

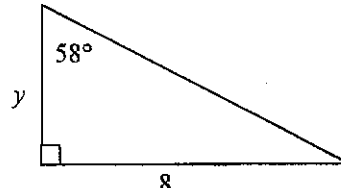
a)



$$\tan 29 = \frac{x}{44}$$

$$x = 24.4$$

b)



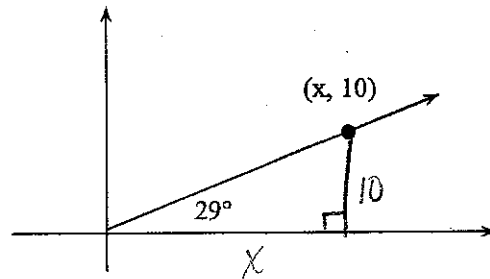
$$\tan 58 = \frac{8}{y}$$

$$y = 8 / \tan 58 \approx 5$$

7) The line to the right goes through the point $(x, 10)$. If the angle the graph makes with the x -axis is 29° , what is the x -coordinate of the point?

$$\tan 29 = \frac{10}{x}$$

$$x = \frac{10}{\tan 29} = 18.04$$



8) Find the perimeter of the triangle.

$$\tan 42 = \frac{x}{16}$$

$$x = 14.4$$

$$(14.4)^2 + 16^2 = y^2$$

$$y = 21.5$$

$$P = 51.6 \text{ in}$$

