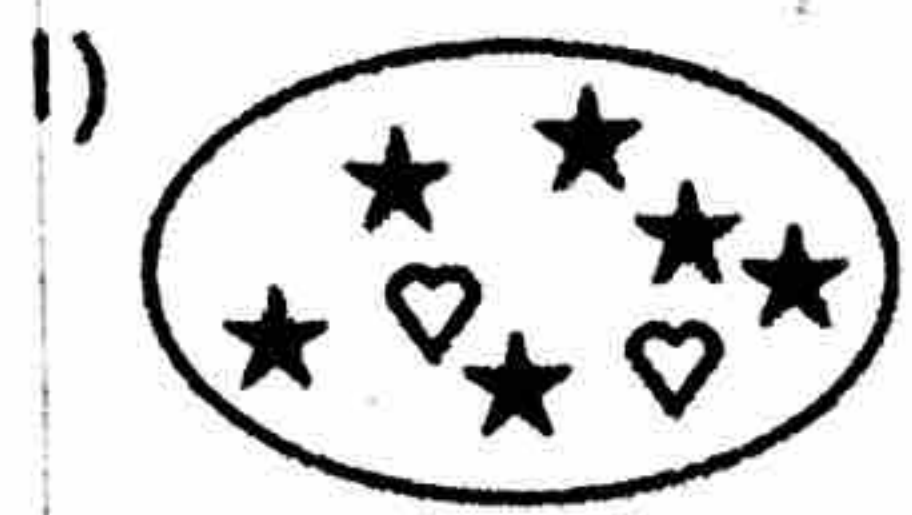
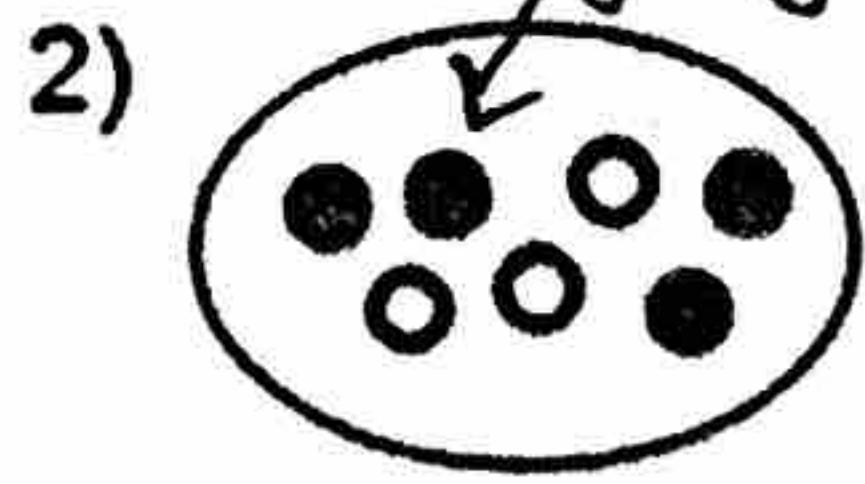


Answer Key

practice makes perfect: probability



1) probability of picking a star?
 $\frac{6}{8} = 75\%$

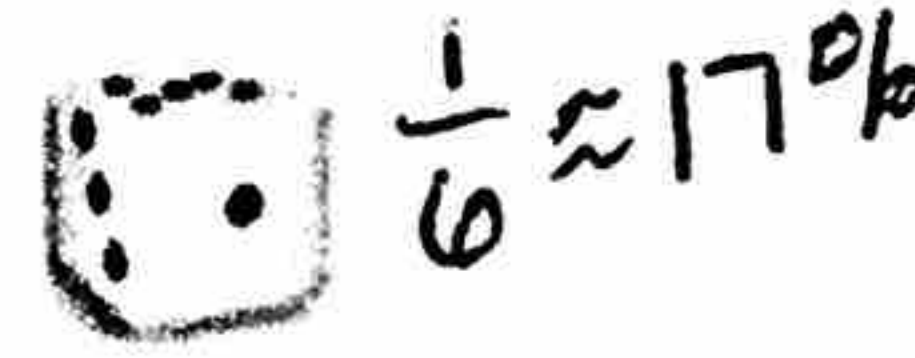


2) probability of picking a grey blob?
 $\frac{4}{7} \approx 57\%$

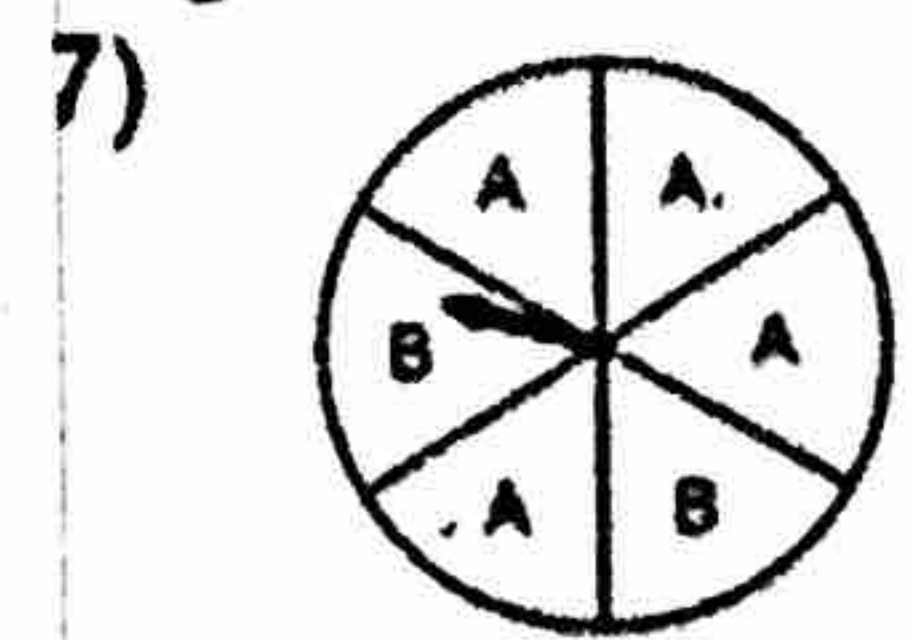
3) probability of picking an A out of APPALACHIAN?
 $\frac{4}{11} \approx 36.36\%$

4) smallest probability? 0%
 largest probability? 100%

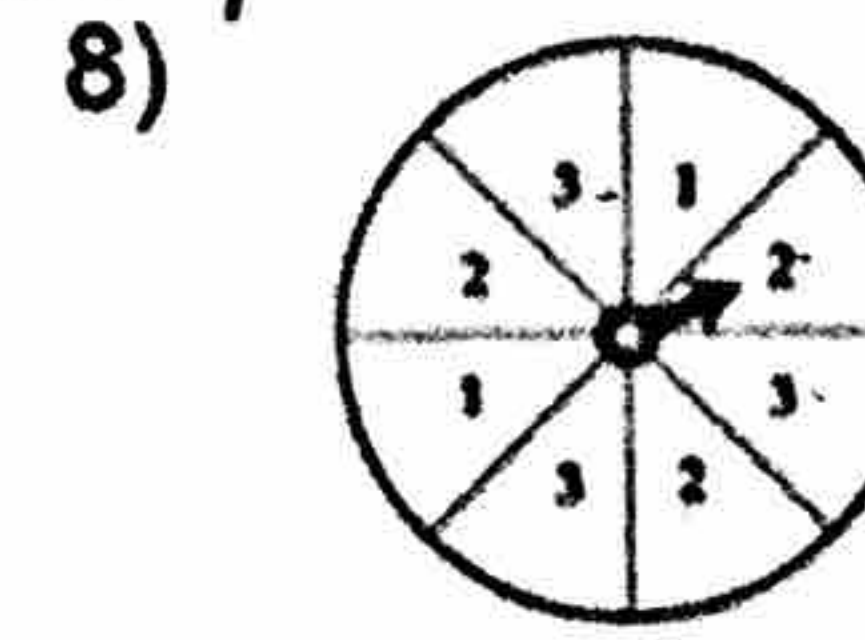
5) chance of rolling a factor of 6?
 $\frac{1}{6} \approx 17\%$



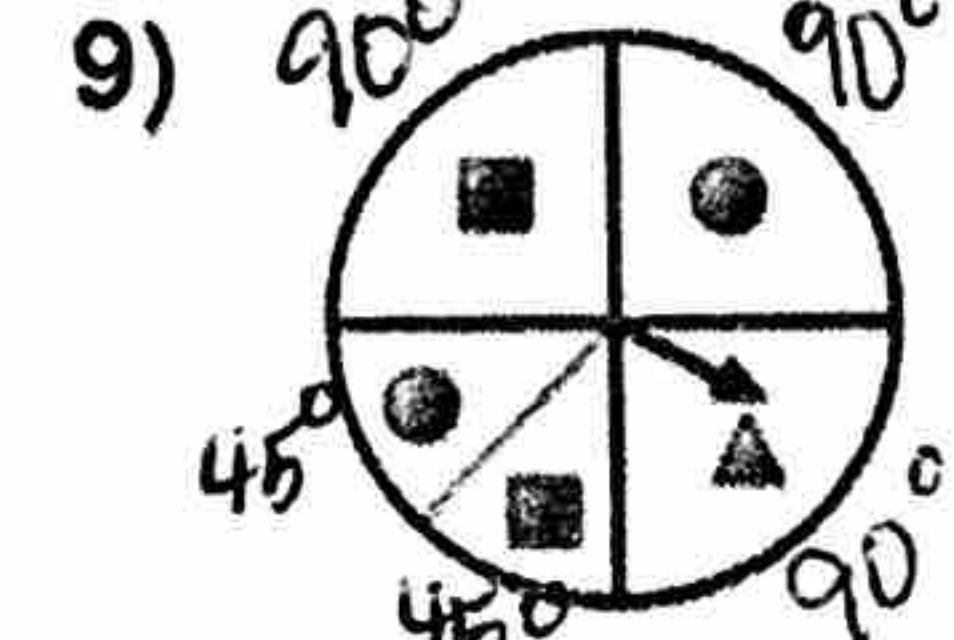
6) probability of not throwing a multiple of 3?
 $\frac{2}{6} \approx 33\%$
 1, 2, 3, 4, 5, 6
 ↑ ↑
 multiples of 3



7) probability of an A?
 $\frac{4}{6} \approx 67\%$



8) probability of not a 12?
 $\frac{6}{8} = 75\%$



9) probability of a square?
 $\frac{2}{5} = 40\%$

10) mark on the scale the probability of getting a factor of 10 when you throw a dice
 1, 2, 5
 $\frac{3}{10} = 30\%$

11) probability scale
 what fraction would a good chance be?
~~scribbled out~~

12) what fraction would this probability be?
 $\frac{3}{10}$

13) probability that Beth picks an ace is 4/52 what is the probability that Beth will not pick an ace?
 $1 - \frac{4}{52} = \frac{48}{52} \approx 92.3\%$

14) other ways that 3 coins could land?
 HHH
 TTH
 TTT
 HTH
 THH
 THT
 HHT
 HTT

15) how many ways can you arrange these letters?
~~scribbled out~~

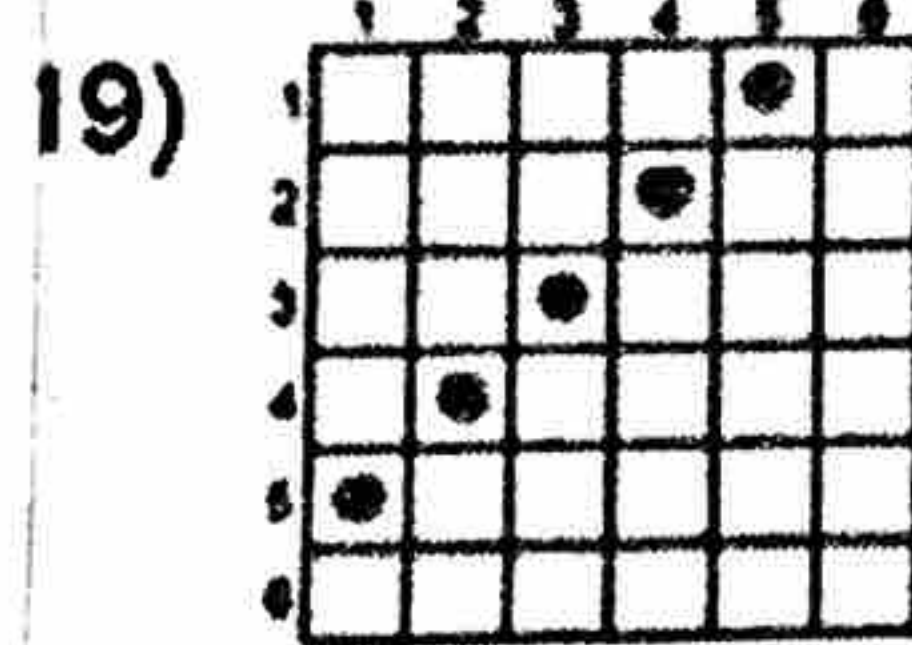
16) chance of snow one day = 0.32
 chance not snowing on that day? 0.68

17) chance of scoring a total of 5?

0	1	2	3	4	5
1	2	3	4	5	6
2	3	4	5	6	7
3	4	5	6	7	8
4	5	6	7	8	9
5	6	7	8	9	10

 $\frac{4}{36} \approx 11.1\%$

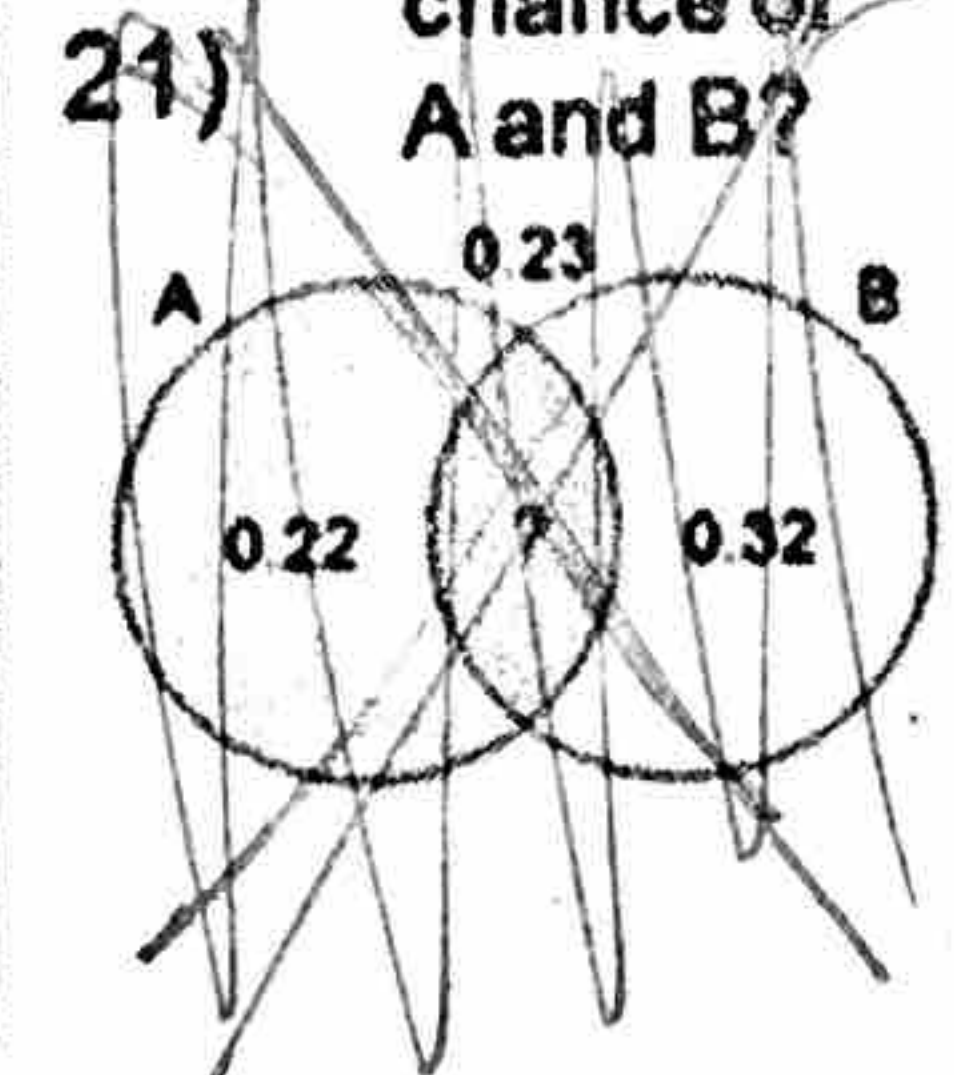
18) mark on the scale the probability of getting one head when you throw two coins
 HH HT
 TH TT
 $\frac{2}{4} = 0.5$



19) chance of scoring a total of 6 with 2 dice?
 $\frac{5}{36} \approx 13.9\%$



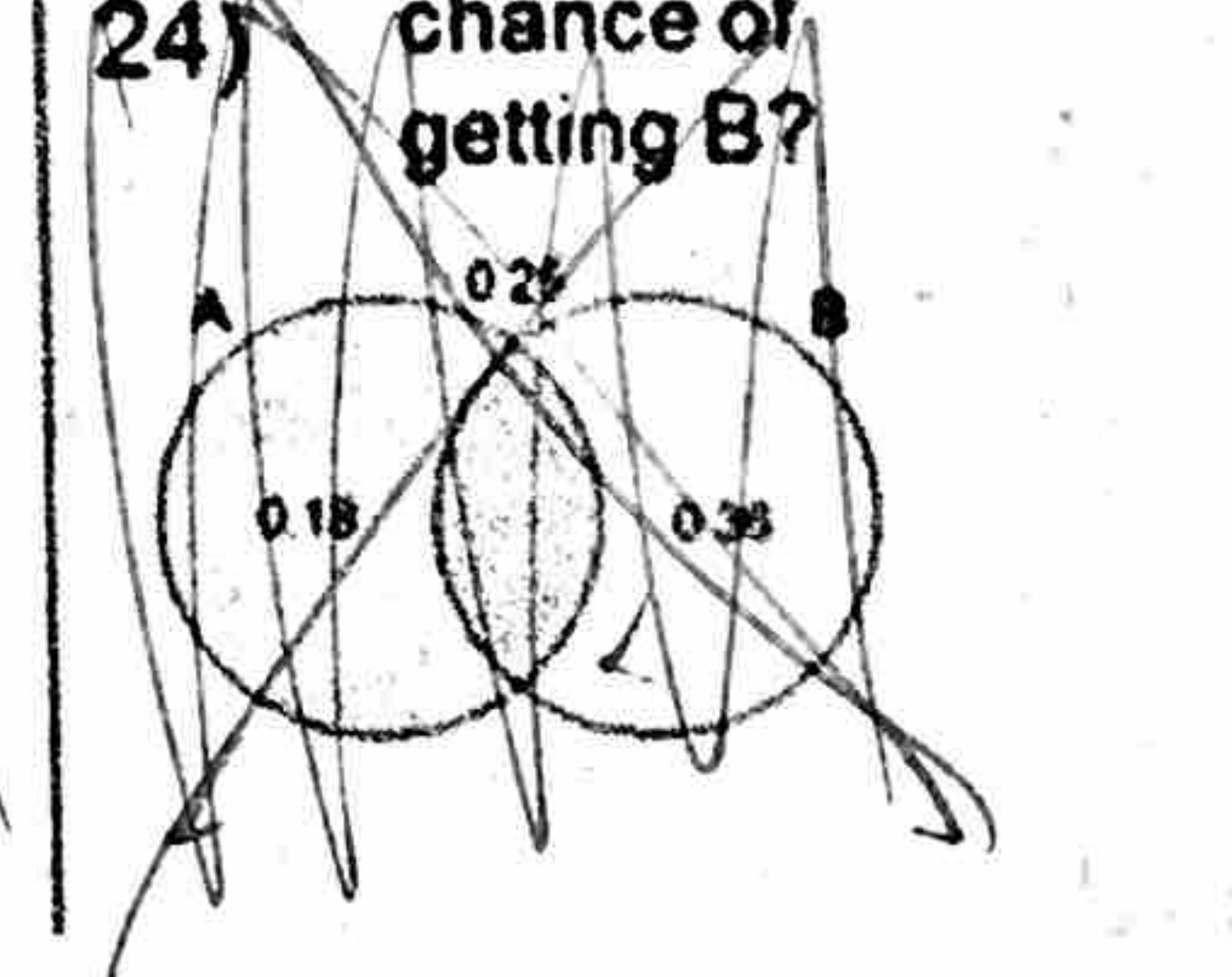
20) chance of getting a double with 2 dice?
 $\frac{6}{36} \approx 16.7\%$



21) chance of A and B?
 0.23

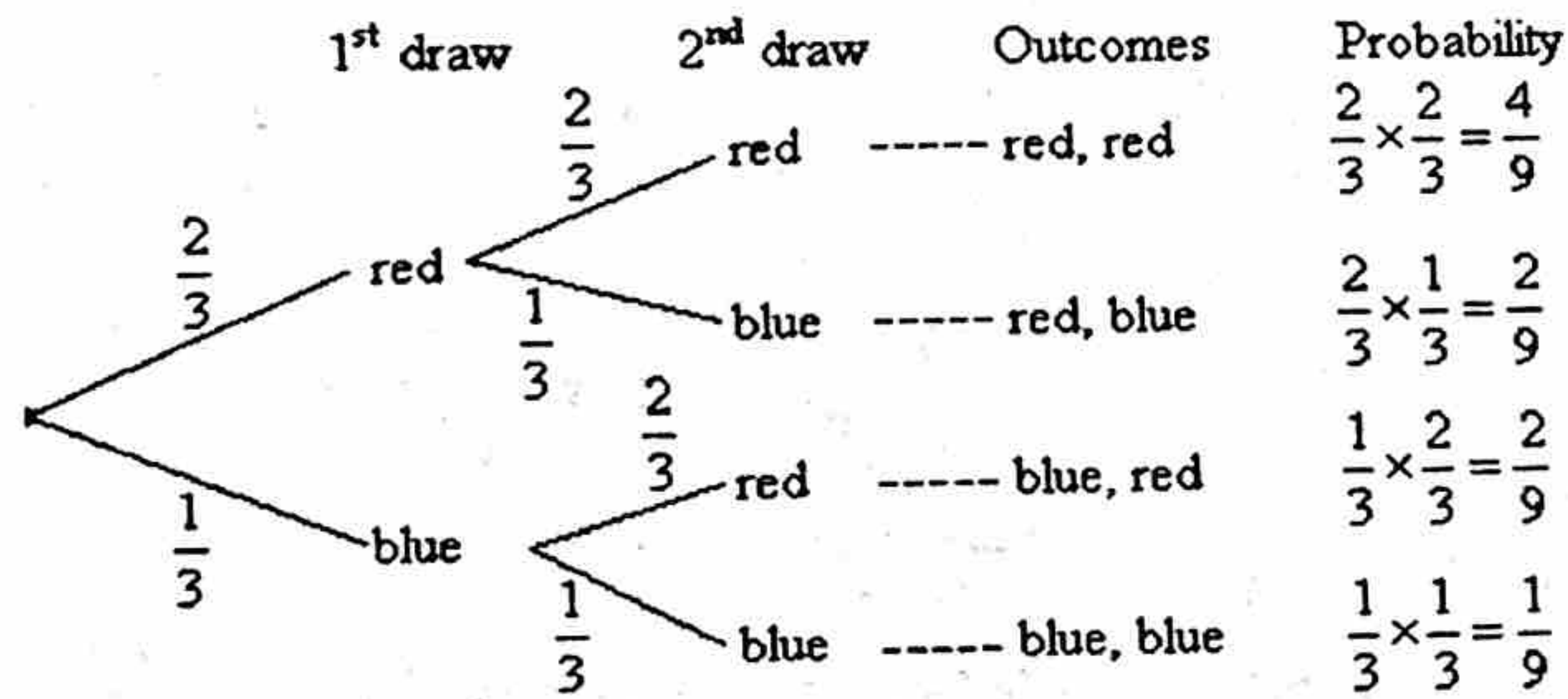
22) chance of getting a difference of 4 with 2 dice?
 $\frac{4}{36} \approx 11.1\%$

23) how many ways can you sit 4 gnomes on these chairs?
~~scribbled out~~



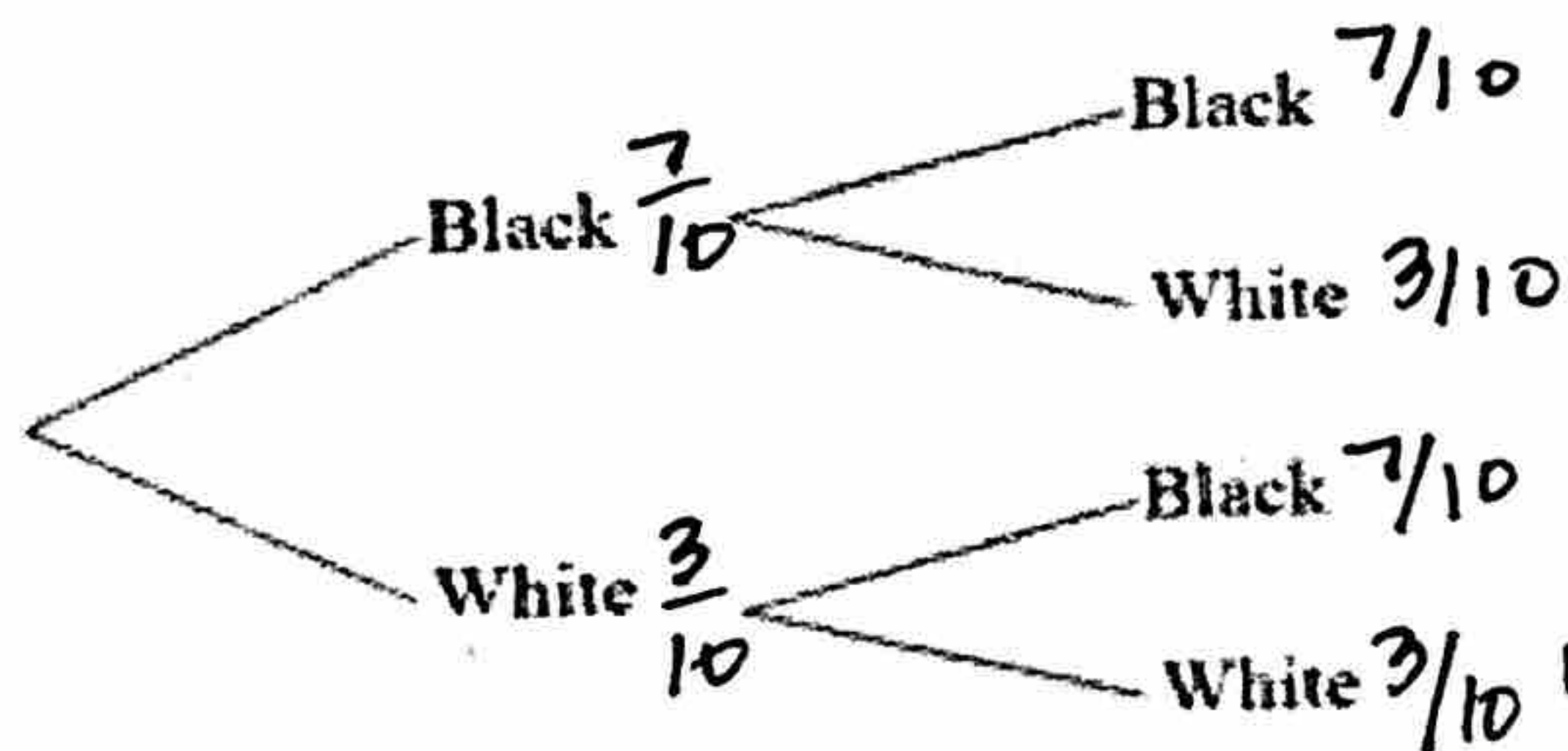
24) chance of getting B?
 $0.35 + 0.23 = 0.58$

25) A tree diagram is used to represent and organize information for probability of 2 or more independent events. Explain all the different parts in the tree diagram below.



The tree diagram needs to be labeled with both words and probabilities. Each branch is an outcome. 1st draw could get red or blue. The probability of getting red is $\frac{2}{3}$. The probability of blue is $\frac{1}{3}$. For 2nd draw, same probabilities. The reason there are two sets of branches is to represent what happens after 1st branch. So if you draw a red 1st, then probability of red on 2nd draw is $\frac{2}{3}$ and $\frac{1}{3}$ for blue. But if you draw blue 1st, then prop. of red is $\frac{2}{3}$ and blue $\frac{1}{3}$.

26) A bag contains 10 discs: 7 are black and 3 white. A disc is selected, and then put back in the bag. A second disc is selected. Complete the tree diagram showing all the probabilities and outcomes.



Find the probability that:
 a) both discs are black
 b) both discs are white

outcomes

BB

BW

WB

WW

probabilities
 $(\frac{7}{10})(\frac{7}{10}) = \frac{49}{100}$

$(\frac{7}{10})(\frac{3}{10}) = \frac{21}{100}$

$(\frac{3}{10})(\frac{7}{10}) = \frac{21}{100}$

$(\frac{3}{10})(\frac{3}{10}) = \frac{9}{100}$

a) $P(BB) = \frac{49}{100}$

b) $P(WW) = \frac{9}{100}$

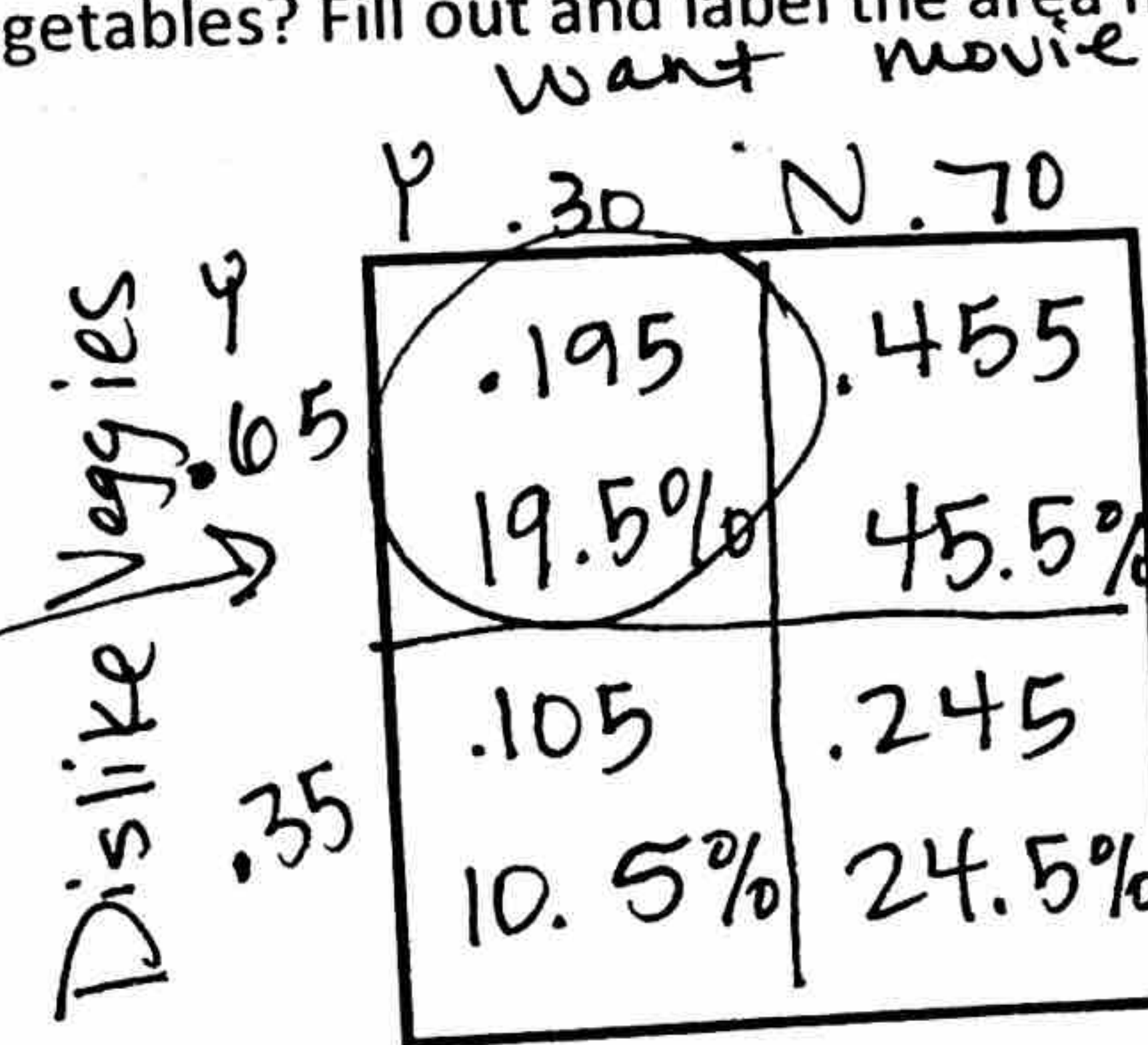
27) In a recent survey, 30% of children wanted to go see a movie this weekend. Meanwhile, 65% of children say that they dislike vegetables. What is the probability that a child selected at random wants to go see a movie this weekend AND dislikes vegetables? Fill out and label the area model below.

Wants to go see a movie this weekend

Yes 30% No 70%

Dislikes vegetables

Yes 65% No 35%

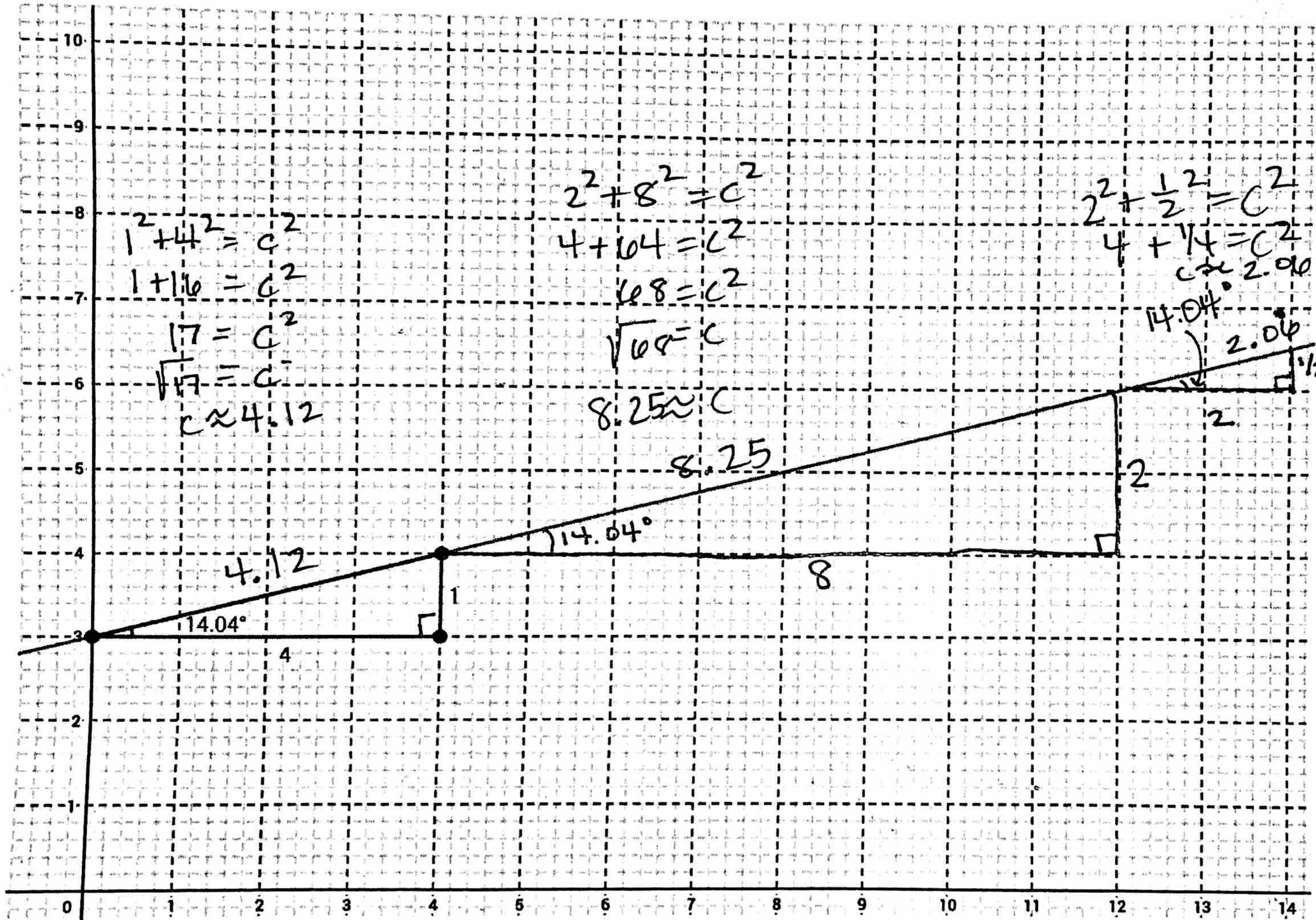


Probability that a child wants to go see a movie & dislikes veggies?

19.5%

$\theta \approx 22.62^\circ$

28) In 3.2.1, in question 3-68, you did this same exploration with a different line. In order to determine an angle, you need to investigate the relationship between the angles and the sides of a right triangle. You will start by studying slope triangles. Notice that one slope triangle has been drawn for you.



investigate the relationship between the angles and the sides of a right triangle. You will start by studying slope triangles. Notice that one slope triangle has been drawn for you.

a. Draw three new slope triangles on the line. Each should be a different size. Label each triangle with as much information as you can, such as its horizontal and vertical lengths and its angle measures.

b. Explain why all of the slope triangles on this line must be similar.

The Δ s are dilations of each other. SSS Δ

$$\frac{1}{4} = \frac{2}{8} = \frac{1/2}{2}$$

$$\frac{4.12}{4} = \frac{8.25}{8} = \frac{2.06}{2}$$

c. Since the triangles are similar, what does that tell you about the slope ratios?

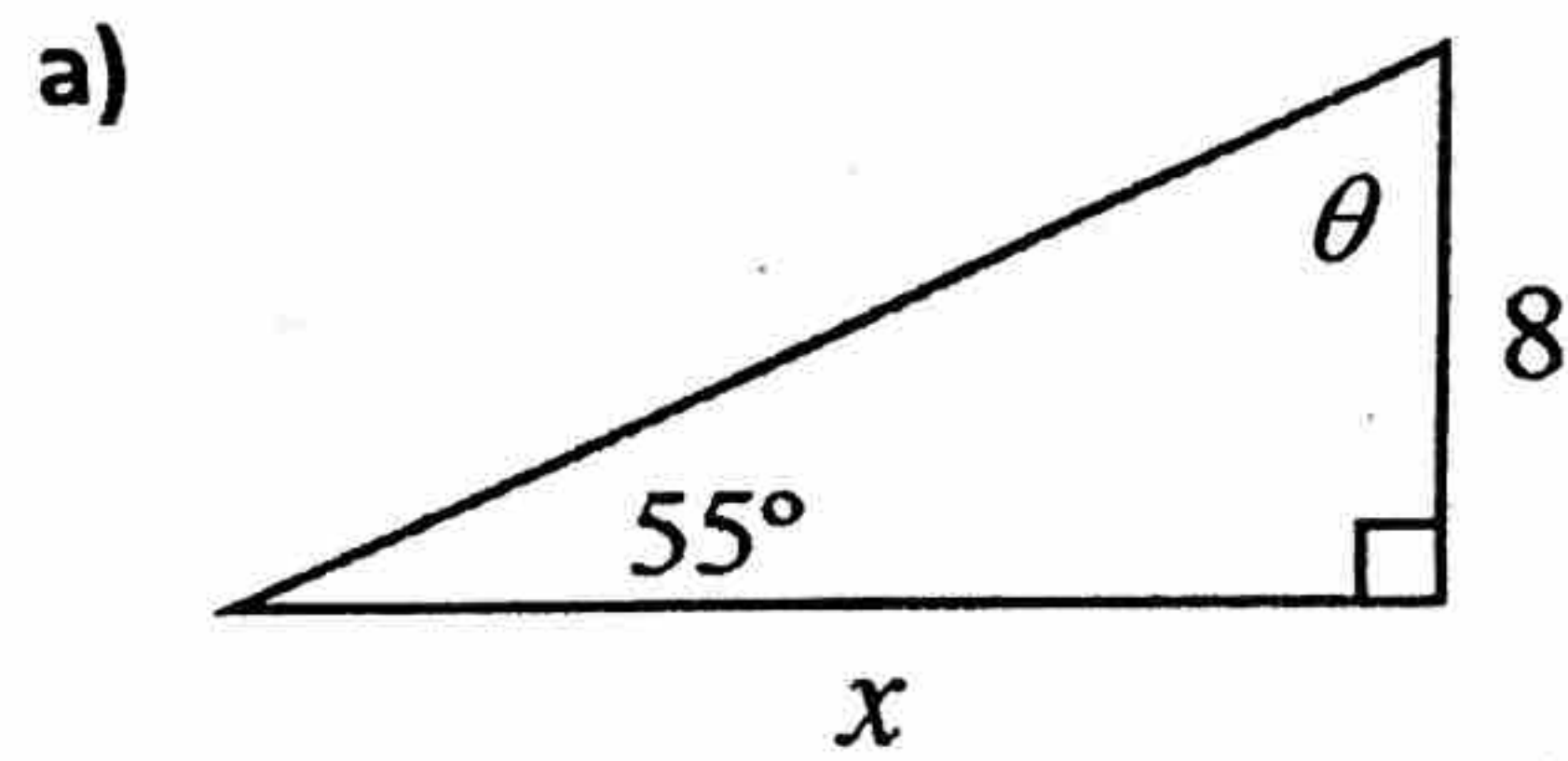
The slope ratios are the same!

d. Confirm your conclusion by writing the slope ratio for each triangle as a fraction, such as $\frac{\Delta y}{\Delta x}$. (Note: Δy represents the vertical change or "rise", while Δx represents the horizontal change or "run".) Then change the slope ratio into decimal form and compare.

$$\frac{\Delta y}{\Delta x} = \frac{1}{4} = \frac{2}{8} = \frac{1/2}{2} \approx 0.25$$

Chapter 3 introduced tangent as slope ratio and referred to the acute \angle in right Δ as slope ratio.

29) Solve for x and θ .



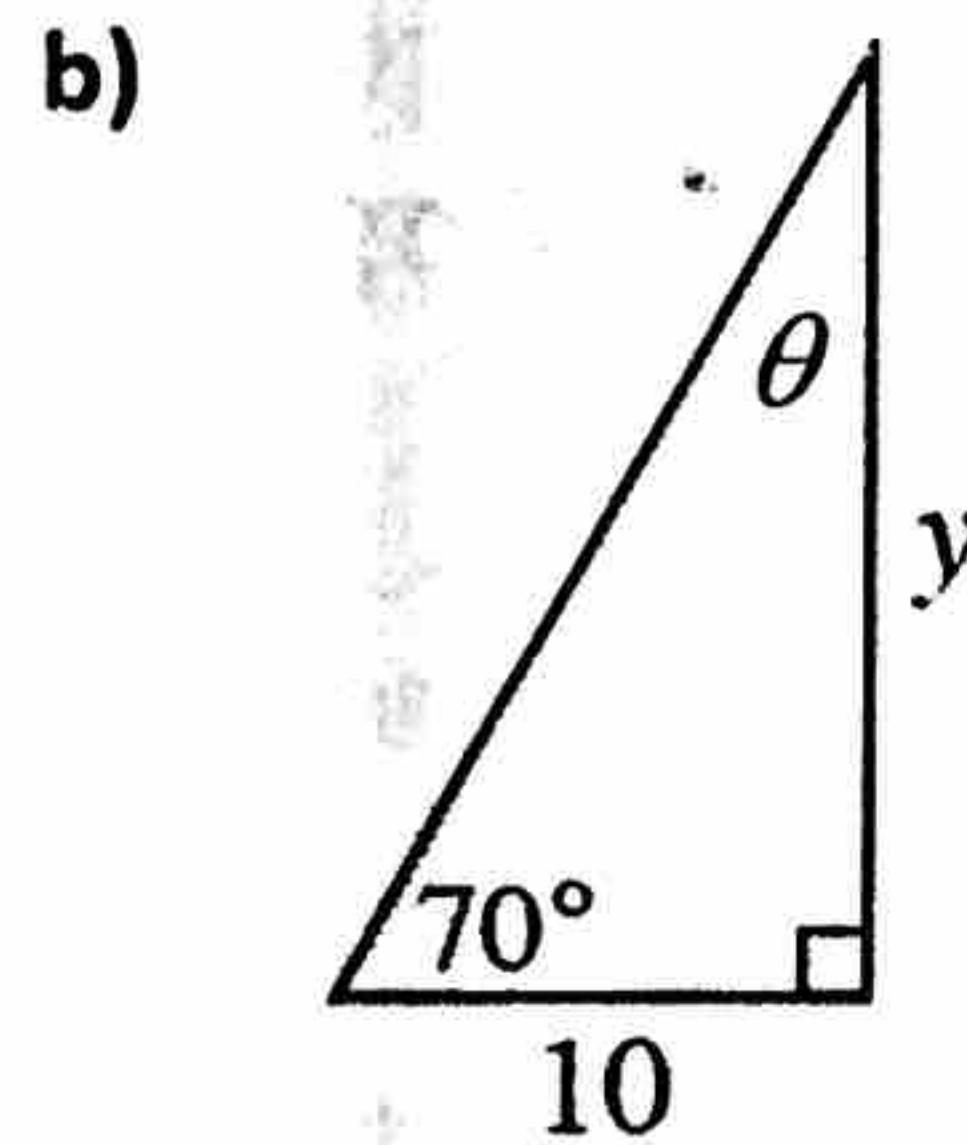
$$90^\circ - 55^\circ = \theta$$

$$\boxed{35^\circ = \theta}$$

$$\tan 55^\circ = \frac{8}{x}$$

$$x \tan 55^\circ = \frac{8}{\tan 55^\circ}$$

$$\boxed{x \approx 5.60}$$



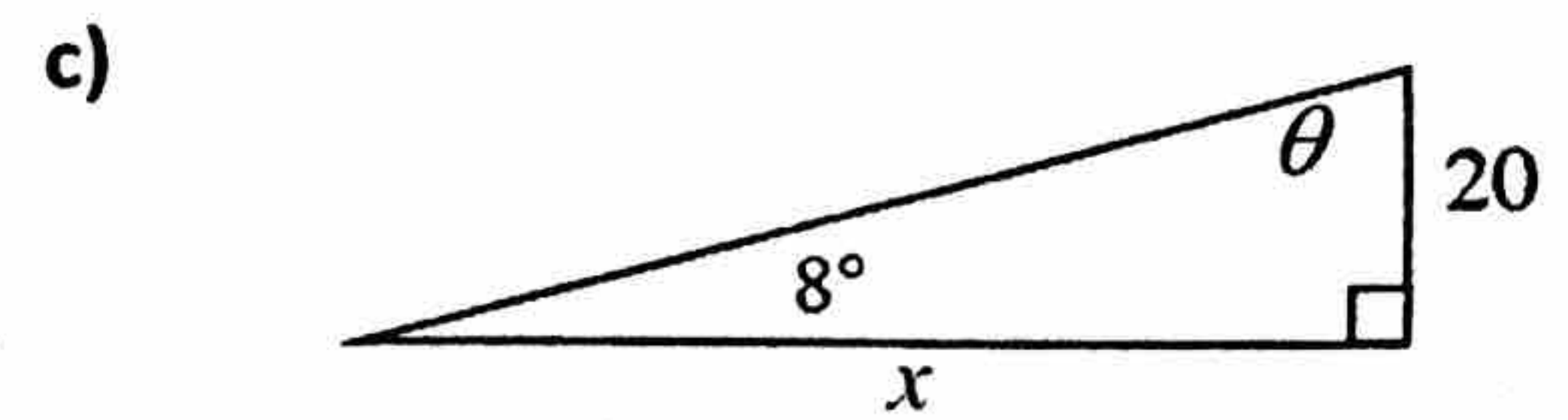
$$\tan 70^\circ = \frac{y}{10}$$

$$10 \tan 70^\circ = y$$

$$90^\circ - 70^\circ = \theta$$

$$\boxed{20^\circ = \theta}$$

$$\boxed{27.47 = y}$$



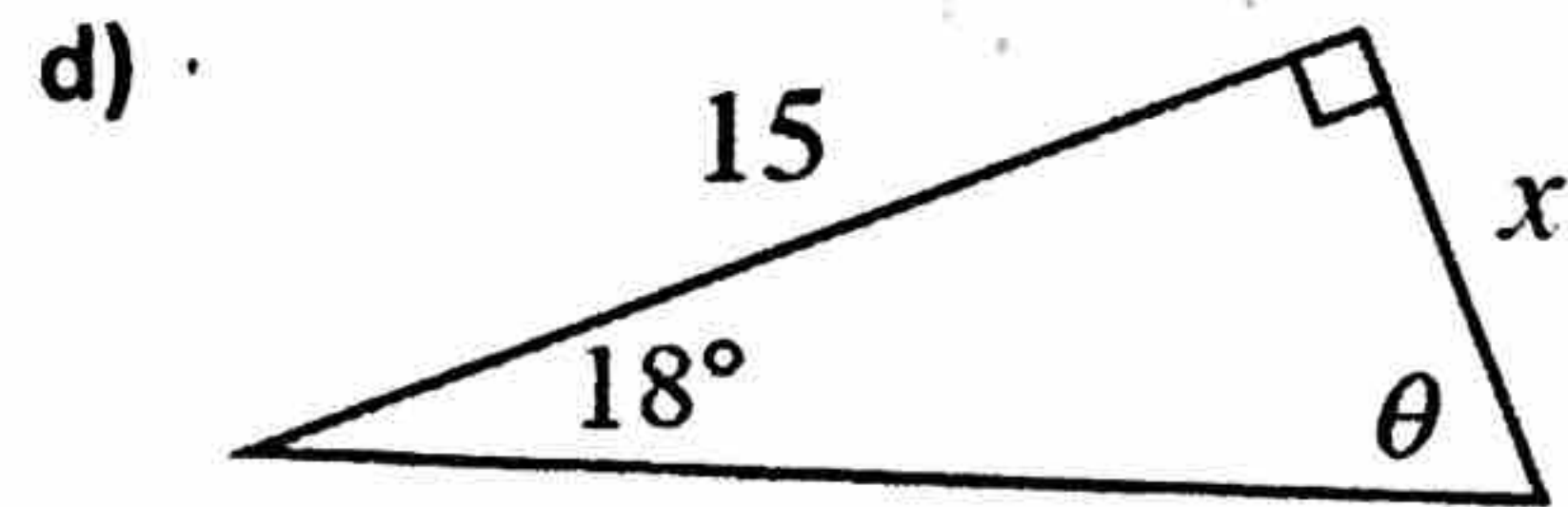
$$90^\circ - 8^\circ = \theta$$

$$\boxed{82^\circ = \theta}$$

$$\tan 8^\circ = \frac{20}{x}$$

$$x \tan 8^\circ = \frac{20}{\tan 8^\circ}$$

$$\boxed{x \approx 142.31}$$



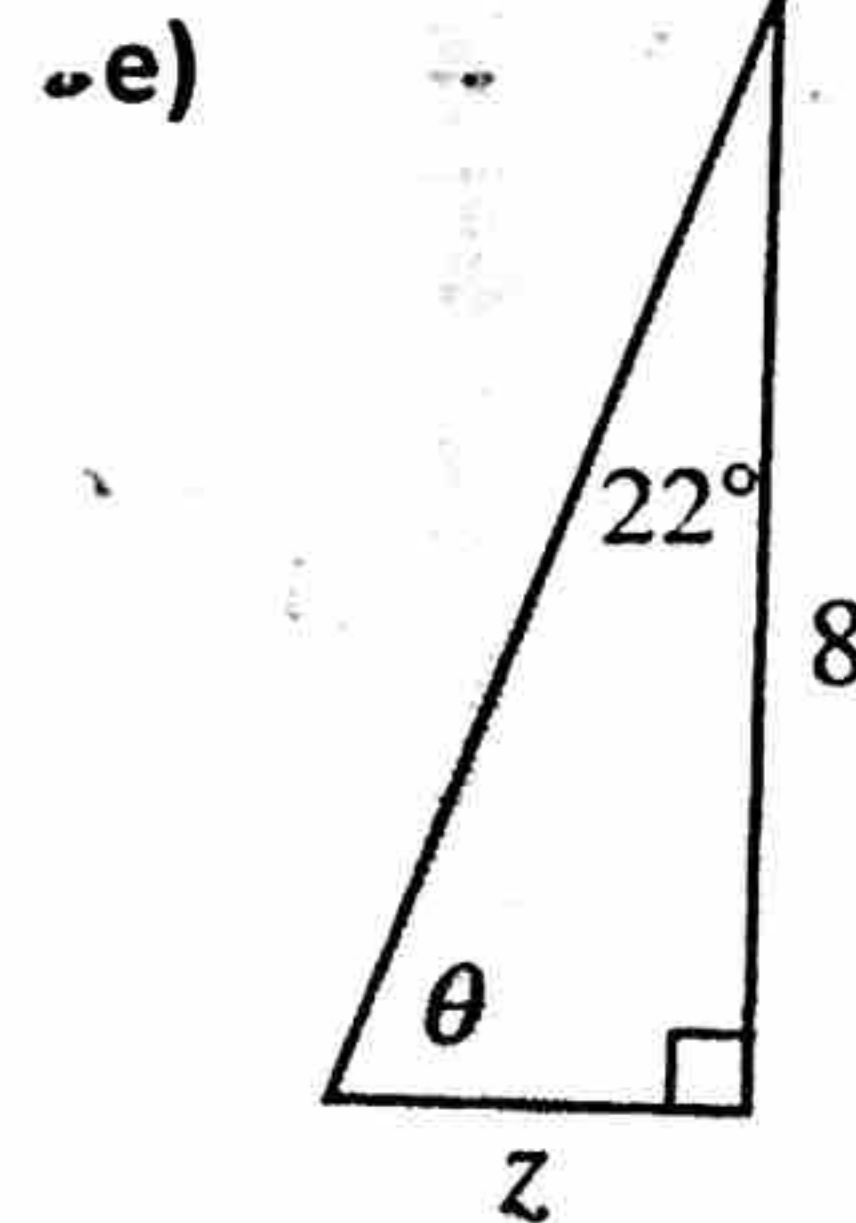
$$90^\circ - 18^\circ = \theta$$

$$\boxed{72^\circ = \theta}$$

$$\tan 18^\circ = \frac{x}{15}$$

$$15 \tan 18^\circ = x$$

$$\boxed{x \approx 4.87}$$



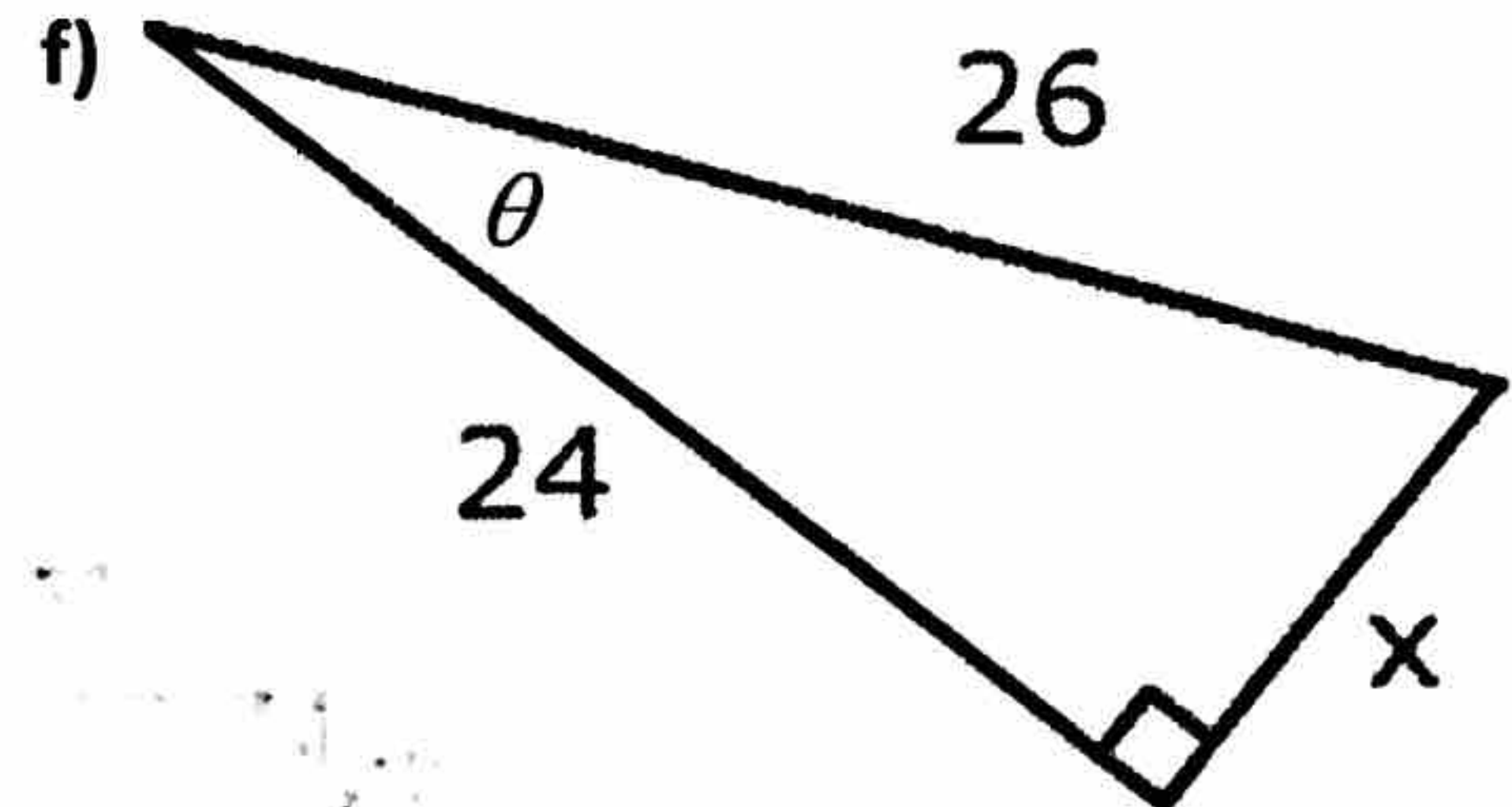
$$90^\circ - 22^\circ = \theta$$

$$\boxed{68^\circ = \theta}$$

$$\tan 22^\circ = \frac{z}{8}$$

$$8 \tan 22^\circ = z$$

$$\boxed{z \approx 3.23}$$



$$24^2 + x^2 = 26^2$$

$$576 + x^2 = 676$$

$$x^2 = 100$$

$$\boxed{x = 10}$$

$$\tan \theta = \frac{10}{24}$$

$$\tan^{-1} \left(\frac{10}{24} \right) = \theta$$

$$\boxed{\theta \approx 22.62^\circ}$$

30) How is the tangent ratio related to the slope of a line?