You take a three question True/False quiz.

If you guess on all three problems what is the probability that you pass?

Simulation:

Performing an experiment to model an actual situation.

What could you use to simulate guessing on a True/False question?

How could you simulate guessing on three T/F questions?

You'll use 3 pennies to simulate guessing on three T/F questions.

We'll assign Heads to be a correct answer.

>Work in pairs
>One person will shake up and drop all three coins on the table
>The other person will record the results as H or T for each coin.
>Perform 25 trials

Trial #	Results of the 3 coins	# guessed correctly
Ex:	H,T,T	1
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

times each outcome occured:

		total
3 correct	1,1,4,5,4,4,2,3,3,3,7,2 =	39
2 correct	6,10,9,9,10,9,10,11,8,10,8,13 =	113
1 correct	13,10,10,8,8,10,8,6,12,10,8,8 =	111
0 correct	5,4,2,3,4,2,5,5,2,2,2,1 =	37
		300

Find each experimental Probability as a percent to the nearest tenth.

1. P(all correct)= $\frac{39}{300}$ = 13.0%

2. P(none correct) = 12.3%

3. P(pass)=
P(2 or 3 correct) $\frac{152}{300}$ = 50.7%

4. P(fail)=
P(0 or 1 correct) $\frac{148}{300}$ = 49.3%

What is the Theoretical Probability of each?

1. Probability of guessing CORRECTLY on a single question.
50%

2. Probability of guessing WRONG on a single question.
50%

3. P(all correct)

CCC=(.5)(.5)(.5)=.125
12.5%

4. P(none correct)

WWW=(.5)(.5)(.5)=.125
12.5%

3. P(pass) → P(2 or 3 correct)

P(2 correct)

CCW=(.5)(.5)(.5)=.125
or
CWC=(.5)(.5)(.5)=.125
or
WCC=(.5)(.5)(.5)=.125

P(3 correct)=(.5)(.5)(.5)=.125

P(Pass)=.125+.125+.125+.125
=.5
50%

4. P(fail) 50%

P(failing) and P(passing) are called complementary events

P(failing) + P(passing)= 100%

P(failing) = 100% - P(passing)

P(failing) = 100% - 50% = 50%

What is the complementary event for each?

1. P(Correct) → P(Incorrect)
2. P(ON) → P(OFF)
3. P(Heads) → P(Tails)
4. P(Tuba) → P(Not Tuba)

Suppose you are given this probability:

$P(\text{Turtle}) = \frac{43}{60}$

What is the complementary event? P(NOT TURTLE)

What is the probability of this complement? $\frac{17}{60}$

Suppose you guess at all three questions of a multiple choice quiz where there are 4 choices for each question (ABCD). What is the probability that you'll pass?

What is the probability that you guess correctly on any one problem? 0.25

All correct: CCC=(.25)(.25)(.25) = 1.5625 %

Two correct: CCW=(.25)(.25)(.75) = 4.6875 %
CWC=(.25)(.75)(.25)
WCC=(.75)(.25)(.25)

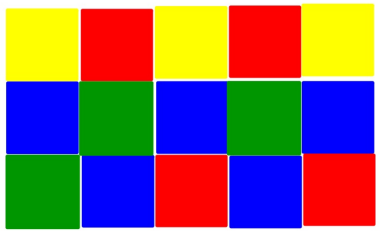
Probability of passing =

1.5625% + 14.0625% = 15.625% chance of passing

Getting all 3 correct

Getting 2 of the 3 correct

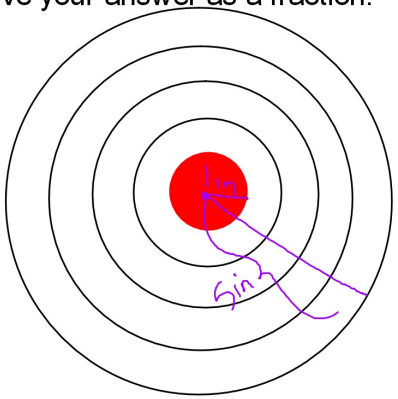
You throw a dart at the target below. Assuming the dart lands somewhere on the target, find the probability that it lands on a Red space. All spaces are equal in size.



$\frac{4}{15}$

Geometric Probability: $= \frac{\text{Area of Favorable Region}}{\text{Total Area}}$

You throw a dart at the target below. Assuming the dart lands somewhere on the target, find the probability that it lands in the bulls-eye. The radius of the bulls-eye is 1 in. The width of each ring is 1 in. Give your answer as a fraction.

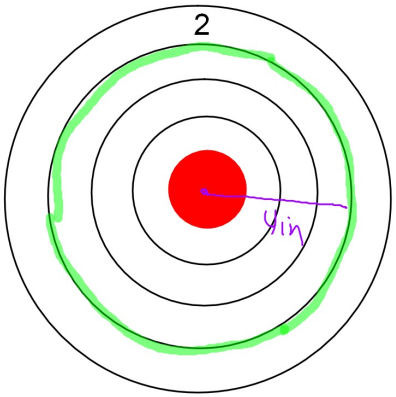


$$\frac{\text{Area of Bulls-eye}}{\text{Area of Target}}$$

$$\frac{\pi(1\text{in})^2}{\pi(5\text{in})^2} = \frac{\pi\,\text{in}^2}{25\pi\,\text{in}^2} = \frac{1}{25}$$

The outer ring is worth 2 points. Find the probability that the dart lands in the 2 point ring.

Area of the 2 pt ring = Area of the target - Area of 4th circle



$$\frac{\pi(5\text{in})^2 - \pi(4\text{in})^2}{25\pi\,\text{in}^2} = \frac{9\pi}{25\pi} = \frac{9}{25}$$