

GRADE 12 APPLIED  
WEEKLY QUIZ  
WEEK 3 - 22 04 21

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

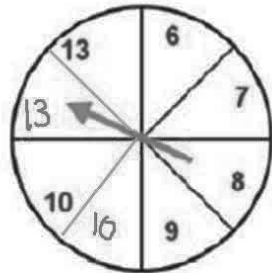
OPEN BOOK! (this time)

Use your (or my) cheat sheet.

Show work for best mark. Each individual question is worth 2 marks unless otherwise noted.

If doing this quiz remotely and unable to print this, just sketch out any diagrams and solve on loose paper. Clearly show your solution; not necessary to copy out the entire question. Solve Scan Send as PDF scanned file.

2. Consider the spinner shown to the right. Determine:



Equal sizes!

a) the probability of spinning a 6. (1.33 marks)

b) the Odds Against spinning a single digit number. (1.33 marks)

c) the Odds in Favour of spinning an even number. (1.33 marks)

a)  $P(6) = \frac{1}{8} = 12.5\%$

b) odds against single digit  $\Rightarrow$   $\frac{4}{\text{NOT SINGLE}} : \frac{4}{\text{SINGLE}}$

c) odds for even  $\Rightarrow$   $\frac{4}{\text{EVEN}} : \frac{4}{\text{NOT EVEN}} = 50:50$

DO QUESTION 1 OR QUESTION 2; Not Both

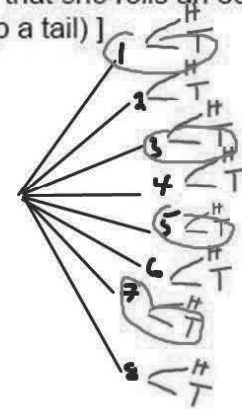
1. Kaitlynn rolls an 8-sided (octahedron) die numbered 1 to 8 and she flips a coin. All probabilities in this question will be answered as a percent rounded to the nearest hundredth place.

$\frac{4}{8} \cdot \frac{1}{2} = \frac{4}{16}$

a) Construct a sample space. (tree or table)

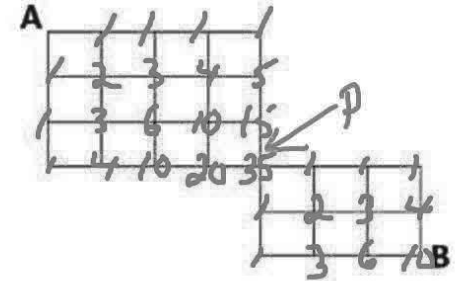
b) Determine the probability that she rolls an odd number and flips a tail? [ Prob(roll odd # and flip a tail) ]

Die	Coin	
	H	T
1	1H	1T
2	2H	2T
3	3H	3T
4	4H	4T
5	5H	5T
6	6H	6T
7	7H	7T
8	8H	8T



$P(\text{odd, tail}) = \frac{4}{16} = \frac{1}{4} = 25\% = 25.00\%$

3. How many ways can you go from A to B in the diagram below if you can only move right or down?



$35 \cdot 10 = 350$

Work Area:

OR

$A \rightarrow B \Rightarrow \frac{7!}{4!3!} = 35 \text{ ways}$

$B \rightarrow A \Rightarrow \frac{5!}{3!2!} = 10 \text{ ways}$

$35 \cdot 10 = 350 \text{ ways}$

4. Gina wants to decorate her living room arranging different family portraits on a shelf. She has twelve family portraits and wants to use 4 of them lined up (in some order) on the shelf. In how many ways can Gina do this?

4 in some order

$$12 \cdot 11 \cdot 10 \cdot 9 = 11880 \text{ ways}$$

12 pics

or  $12^P_4 = nPr(12,4) = 11880$

5. You have a stack of ten cards numbered 11 to 20. Determine the probability that a randomly drawn card is an odd number or a multiple of three?

Sample space:  $\{11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$  Did this yesterday!

odd = 5 of them

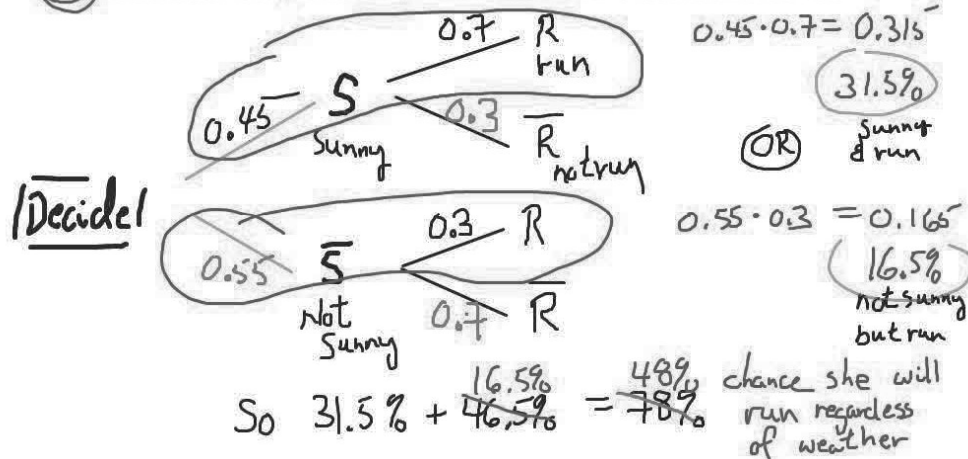
divisible by 3 = 2 (we already counted the "15")

$P(\text{odd "or" divisible by 3}) = \frac{7}{10} = 0.7 = 70\%$

6. Lena runs every day. If it is sunny, the probability she will run outside is 70%. If it is not sunny, the probability that she will run outside is 30%. A 45% probability of sunshine has been announced for tomorrow.

a) Use a graphic organizer (probability tree) to show all the possible outcomes for this situation

b) Determine the probability that Lena runs outside tomorrow.



7. How many ways can we distinguishably arrange all the letters in the word COFFEE?

↳ so we can see a difference

$6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 720$  if all the letters were different

but there is 2 F's and 2 E's

$\therefore \frac{6!}{2!2!} = \frac{6!}{2!2!}$

↑ 2 F's    ↑ 2 E's

So COFF<sub>1</sub>E<sub>1</sub>E<sub>2</sub> looks same as COF<sub>2</sub>E<sub>1</sub>E<sub>2</sub> and COF<sub>1</sub>E<sub>2</sub>E<sub>1</sub> and COF<sub>1</sub>E<sub>2</sub>E<sub>2</sub> } For every way to arrange them there 4 the same

$= 180$

180 ways to distinguishably arrange the letters

8. Mr.F has been asked to assemble any five of his students to go to the lounge to set up chairs! Mr.F has 12 students in the class.

- how many different groups of five are possible?
- determine the probability that Sandra is in the group going to set up chairs.

a) Combo! unordered arrangement! A "group"

$${}_{12}C_5 = nCr(12,5) = 792$$

b) Well we already decided on Sandra so only need to select 4 students out of 11  
 ${}_{11}C_4 = 330$  groups with Sandra

OMG! I did not go back and read the question! b/f

So 330 groups have Sandra out of total of 792

So  $P(\text{Sandra in the Group}) = \frac{330}{792} = 41.67\%$   
 sounds reasonable.

Always go back and read the question! maybe you had not actually finished it!

**BONUS:**

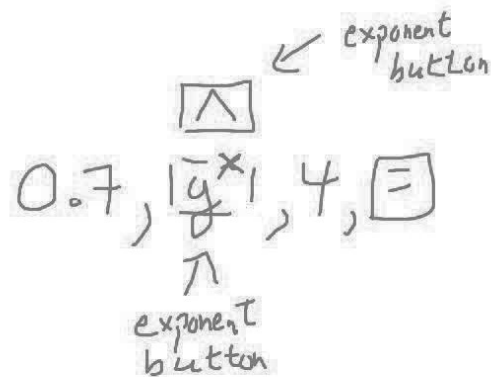
Nickolas has a 70% chance of getting an 'A' on any math test. He has four tests remaining till the end of the course. Determine the probability, as a percent rounded to the nearest tenth, that:

- Nick gets an A on all four tests; ie:  $\text{Prob}(A_1, A_2, A_3, A_4)$
- Nick gets an A on at least one test; ie:  $\text{Prob}(\geq \text{one 'A'})$

a)  $P(A_1, A_2, A_3, A_4) = P(A_1) \cdot P(A_2) \cdot P(A_3) \cdot P(A_4)$   
 $= 0.7 \cdot 0.7 \cdot 0.7 \cdot 0.7$   
 $= (0.7)^4 = 0.2401 = 24.01\%$

b) How many ways can he get no 'A's  $(0.3)^4 = 0.0081$

$\text{Prob}(\text{NOT NO 'A's'}) = P(\text{ONE OR MORE 'A's'}) = 1 - 0.0081 = 99.99\%$



**BONUS.** You are asked to take a 3-question multiple-choice quiz. Each question has 4 possible answers, only one of which is correct. If you *randomly* pick an answer for each of the three questions, what is the probability that all 3 answers are wrong? [Multiple Choice: Circle best or closest answer].

a) 42%

b) 25%

c) 50:50

d) ~2%

$$\frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} =$$

$$42.1875\%$$

use the  
exponent  
button  
your calculator

$$\left(\frac{3}{4}\right)^3 \equiv \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4}$$

↑  
means