

Grab a chromebook

Complete the discussion for Common
Assessment #1 Review

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Review

Permutation

matters

$$\rightarrow P_7 = 5040$$

2. Sasha is in the Italian club. There are 25 students in the club. The Italian teacher will pick two students at random to guide visiting exchange students from Italy. What is the probability that Sasha will **NOT** be picked as a guide?

$$\begin{array}{cc} \text{Pick} & \text{Pick} \\ \hline \text{Sasha} & \frac{1}{25} \quad \frac{1}{24} \end{array}$$

$$\begin{array}{cc} \text{Not Picked} & \text{Not Picked} \\ \hline 1 - \frac{1}{25} = \frac{24}{25} & 1 - \frac{1}{24} = \frac{23}{24} \end{array}$$

$$\text{And} \rightarrow \text{Multiply} \quad \frac{24}{25} \cdot \frac{23}{24} = \boxed{\frac{23}{25}}$$

place?

Order Matters \rightarrow Perm

$$15P_2 = 210$$

$$\begin{array}{c} \text{1st} \quad \text{2nd} \\ \underline{15} \cdot \underline{14} = 210 \end{array}$$

And \rightarrow multiply

$$P(Q \text{ and } R) = (0.2)(0.6) = .12$$

$\hat{O}_r \rightarrow \text{Add}$

$$\frac{4}{18} \frac{\text{red}}{\text{total}} + \frac{8}{18} \frac{\text{blue}}{\text{total}} = \frac{12}{18} = \boxed{\frac{2}{3}}$$

$$\|C\| = 1$$

$$\|P\| = 39916800$$

7. Abby took a 10-question multiple-choice quiz. Suppose her probability of correctly answering any question is 0.70. What is Abby's probability of incorrectly answering exactly two questions on the quiz?

Exactly \rightarrow PDF

Trials: 10

$P: 1 - .7 = .3$

$X: 2$

.233

8. At a university, the probability that an incoming freshman will graduate within four years is 0.567. What is the probability that **at most** 70 out of a group of 150 incoming freshman will graduate in four years?

at most \rightarrow CDF

Trials: 150
p: .567
x: 70

.0085

- The probability of selling the sweet potato pie the first day is 75%.
- If a pie is not sold on the first day, the new price is \$8.50.
- There is a 12% probability of selling it on the second day.
- If the sweet potato pie does not sell by the end of the second day, it is donated.

What is the approximate expected profit per pie for the bakery on the sale of its sweet potato pie?

$$(12 - 3.50)(.75) + (8.50 - 3.50)(.12) - (3.50)(.13) = \boxed{\$6.52}$$

1st Day
2nd Day
Donated

$$100 - (75 + 12) = 13\%$$

terms = degree + 1 = 11

middle term \rightarrow 6th term

$$1(y^2)^{10} + 10(y^2)^9(2)^1 + 45(y^2)^8(2)^2 + 120(y^2)^7(2)^3 + 210(y^2)^6(2)^4 + 252(y^2)^5(2)^5$$

$$\frac{32 \cdot 252 y^{10}}{8064 y^{10}}$$

11. Suppose you are drawing a card from a standard 52 card deck and are choosing either a diamond or a queen. What is the probability of drawing a diamond or a queen?

$$\begin{array}{ccc} \text{Diamonds} & \text{Queen} & \text{Overlap} \\ \frac{13}{52} + \frac{4}{52} & - \frac{1}{52} & = \frac{16}{52} = \frac{4}{13} \end{array}$$

OR \rightarrow add

How many different ways can the letters of the word "MATHS" be arranged if each arrangement begins with a vowel?

Permutation

$$\underline{2} \cdot \underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1} = \boxed{48}$$

$$2P1 \cdot 4P4 = 48$$

and your partner?

↑

$$P(\text{Red}) = \frac{6}{24}$$

$$\frac{6}{24} \cdot \frac{5}{23} = \frac{30}{552} = \boxed{\frac{5}{92}}$$

$$P(\text{Red}) = \frac{5}{23}$$

community.

Televisions	Probability
0	0.20
1	0.32
2	0.05
3	A
4	B
5 or more	0.19

What is the probability that house in the community will have at least 3 televisions?

$$1 - (.2 + .32 + .05) = \boxed{.43}$$

~~1 - (.2 + .32 + .05) = .43~~ ← 3

15. What is the fourth term for the expansion of $(2x - 3y)^9$?

$$1 \quad -9 \quad +36 \quad \boxed{-84(2x)^6(3y)^3}$$

↓

$$= -84 \cdot 64 \cdot 27 x^6 y^3$$
$$= \boxed{-145152 x^6 y^3}$$

Sammy is playing a board game. He rolls two number cubes, each numbered 1-6. If he rolls a sum of 2 he wins \$50; otherwise he loses \$5. How much should Sammy expect to win or lose on average per roll?

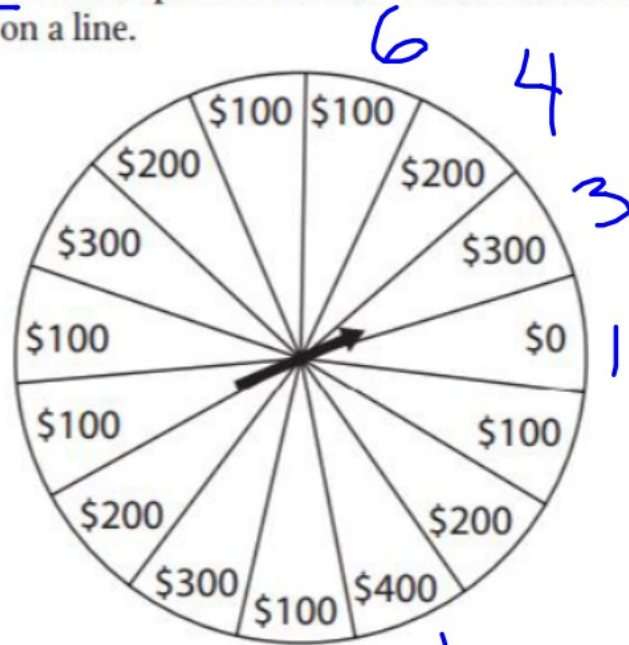
$$\frac{\text{Sum of 2}}{(1,1)}$$

$$\frac{1}{36}(50) - \frac{35}{36}(-5) = \frac{-125}{36} \text{ or } -3.47$$

loses

sum of 2

17. What is the expected value for the spinner? Assume each section is the same size, and assume the spinner will not land on a line.



$$\frac{6}{15}(100) + \frac{4}{15}(200) + \frac{3}{15}(300) + \frac{1}{15}(400) + \frac{1}{15}(0)$$

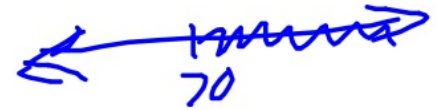
$$= \cancel{\$266.66}$$

$$\boxed{\$180}$$

18. At a university, the probability that a freshman will be promoted to sophomore status within one year is 0.652. What is the probability that at least 70 out of a group of 120 freshman will become sophomores in one years?

CDF

at least



$$\begin{aligned} \text{Trial} &= 120 \\ p &= .652 \\ x &= 70 \end{aligned}$$

$$1 - \text{binomcdf} =$$

19. There is a 92% passing rate for the AFM NCFE at Olympic High School.

a. What is the probability that ^{exactly} 180 out of 230 students will pass?

b. What is the probability that 10 students will not pass? ^{.08}

a) PDF

Trials: 230

$p: .92$

$x: 180$

binom pdf

b) PDF

Trials: 230

$p: .08$

$x: 10$