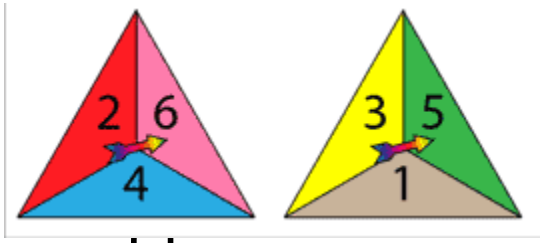
Friday, May 3, 2019



- Warm-up
  - Complete the sample space for the sum of two spinners and calculate the following probabilities

		Odd Spinner		
		1	3	5
Even Spinner	2	3	5	7
	4	5	7	9
	6	7	9	11

  - P(sum of 10) = 0 $\frac{0}{9}$
  - P(odd sum) = 1 $\frac{9}{9}$
  - P(sum of 5 and odd spinner = 3) = $\frac{1}{9}$ both
  - P(sum of 5 or odd spinner = 3) = $\frac{4}{9}$ either one
  - P(sum of 5 | odd spinner = 3) = $\frac{1}{3}$ "given"

given changes denominator to that total!

- Look at Exit Slips
- Review 2-way tables
- Quiz
- War with a Twist

Objectives

Content: I will review the process of calculating probabilities.

Social: I will participate in the class activities.

Language: I will read questions carefully to apply **probability** vocabulary.

Exit Slip

not 0 tails

A fair coin is tossed four times. What is the probability of getting at least one 'Tail'? [With calculator]

HHHH

(A) 1/16

(B) 1/4

(C) 3/4

(D) 15/16

THHH

Show your sample space

Count the total outcomes $2 \cdot 2 \cdot 2 \cdot 2$

Count the favorable outcomes

Write your probability $\frac{15}{16}$

Choose your answer

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Exit Slip

$\frac{3}{8} \cdot \frac{2}{7} = \frac{6}{56}$

$\frac{14}{3} \cdot \frac{3}{8} = \frac{1}{6}$

A box contains 5 black and some green balls. If two balls are drawn from the box at random, and the probability that both the balls are green is 1/6, how many green balls are in the box? [With calculator]

$\frac{15}{20} \cdot \frac{4}{9} = \frac{1}{18}$

(A) ~~3~~

(B) 4

(C) ~~5~~

(D) 6

Draw a picture

Figure out probability of "not green"

Figure out how many there are total

Figure out how many are green

Choose your answer

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Exit Slip

A store is deciding whether to install a new security system to prevent shoplifting. Based on store records, the security manager of the store estimates that 10,000 customers enter the store each week, 24 of whom will attempt to shoplift. Based on data provided from other users of the security system, the manager estimates the results of the new security system in detecting shoplifters would be as shown in the table below.

	Alarm sounds	Alarm does not sound	Total
Customer attempts to shoplift	21	3	24
Customer does not attempt to shoplift	35	9,941	9,976
Total	56	9,944	10,000

According to the manager's estimates, if the alarm sounds for a customer, what is the probability that the customer did *not* attempt to shoplift?

A) 0.03%

B) 0.35%

C) 0.56%

D) 62.5%

$P(\text{Not} \mid \text{Alarm}) = \frac{35}{56}$

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B) 0.35%

C) 0.56%

D) 62.5%

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Grid-In:

A die is rolled four times. What is the probability of getting a number greater than '2' in the first time, greater than '3' in the second time, greater than '4' in the third time, and greater than '5' in the fourth time? [With calculator]

1	/	5	4
.	.	.	.
	0	0	0
	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Show your process for full credit

Think through each individual probability, then put it together through multiplication

$$\frac{24}{36} \cdot \frac{3}{6} \cdot \frac{2}{6} \cdot \frac{1}{6} = \frac{1}{54}$$

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Brain Break

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What flavor of ice cream would you pick?				
	Chocolate	Vanilla	Neither	Total
Children	40	22	15	77
Teens	12	16	45	73
Adults	55	54	10	119
Total	107	92	70	269

- P(vanilla) = $\frac{92}{269}$
- P(adult) = $\frac{119}{269}$
- P(vanilla | adult) = $\frac{54}{119}$ (conditional: given)
- P(vanilla AND adult) = $\frac{54}{269}$
- P(vanilla OR adult) = $\frac{92}{269} + \frac{119}{269} - \frac{54}{269} = \frac{157}{269}$ (not allowed to choose both)
- Is liking chocolate or strawberry ice cream mutually exclusive? (AND - overlap) Yes - mutually exclusive
- Is being an adult and liking vanilla independent? $P(A) = P(A|B)$ NO (not equal)

$P(V) \stackrel{?}{=} P(V|A)$

$\frac{92}{269} \stackrel{?}{=} \frac{54}{119}$

$.342 \stackrel{?}{=} .45$

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Questions?

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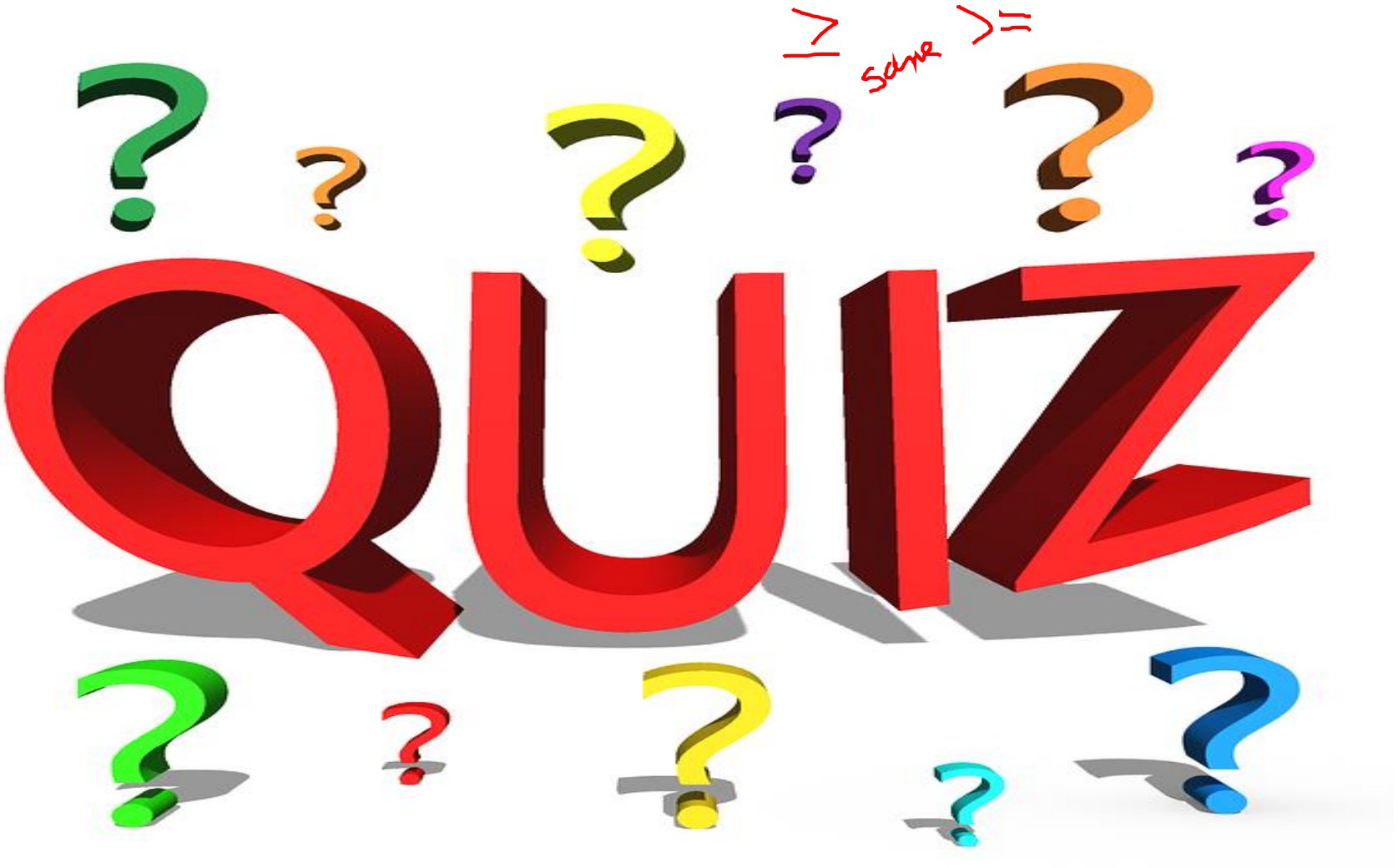

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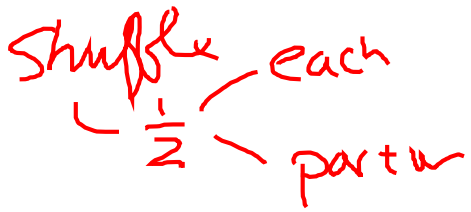
War with a Twist



- Play in pairs
- Divide the cards equally among the two players
- Each player turns two cards face up and determines the probability of selecting each of those two cards by suit.
- The player with the greater probability takes all four cards and places them at the bottom of their stack. If there is a tie, players find the sum of their two cards (A = 1, J = 11, Q = 12, K = 13). The player with the greater sum then takes all four cards.
- In the case of a second tie, each player turns one more card face up and repeats the process.
- Play continues until one player runs out of cards, or time is called.

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