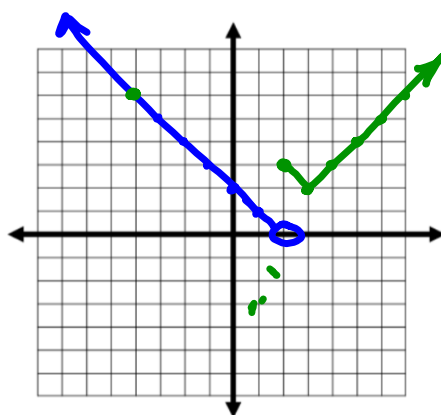


Bell Ringer

Tuesday 1/7

Graph the function. Evaluate the graph at the specified domain values.

$$1. \quad f(x) = \begin{cases} -x + 2, & x < 2 \\ |x - 3| + 2, & x \geq 2 \end{cases}$$



$$f(-4) = \boxed{6}$$

$$f(2) = \boxed{3}$$

$$f(3) = \boxed{2}$$

2. Determine if the following are independent or dependent events:

Flipping a coin and spinning a spinner. *Ind*

Drawing a six in a standard deck of cards, holding on to it, then drawing another six. *Dep*

Rolling an even number on a die, then rolling an odd number. *Ind*

correct 5.1 ws

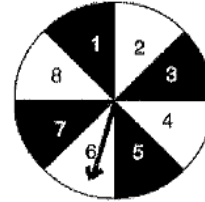
Name: Key

Sec. 5.1
Sample Space and Outcomes

Experimental and Theoretical Probability

You spin a black and white numbered spinner 10 times. The results are shown below.

6, 5, 8, 5, 3, 1, 1, 5, 4, 7



Find the experimental probability of each outcome. Express answers as a fraction.

1. $P(\text{spinning a 5}) =$

$$\frac{3}{10}$$

2. $P(\text{spinning a 6}) =$

$$\frac{1}{10}$$

3. $P(\text{rolling an even number}) =$

$$\frac{3}{10}$$

4. $P(\text{spinning a black number}) =$

$$\frac{4}{10}$$

5. What is the experimental probability of spinning an odd number on the spinner? For 50 spins of the spinner, predict the number of spins that will result in an odd number.

$$\frac{7}{15}$$

35 spins

Find the theoretical probability of each outcome. Express answers as a percent rounded to the nearest tenth.

6. $P(\text{spinning a 5}) =$

$$\frac{1}{8}$$

7. $P(\text{spinning a 6}) =$

$$\frac{1}{8}$$

8. $P(\text{spinning an even number}) =$

$$\frac{1}{2}$$

9. $P(\text{spinning a black number}) =$

$$\frac{1}{2}$$

10. $P(\text{spinning an odd white number}) =$

$$0$$

11. $P(\text{spinning a multiple of 3}) =$

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

+4

List the sample space then find the number of possible outcomes in the sample space.

12. What is the sample space for choosing an odd number from 1 to 11 at random?

1, 3, 5, 7, 9, 11 6 outcomes

13. You roll a die and flip a coin twice.
Labels (1-6 on die, H=heads, T=tails)

1	2	3	4	5	6
1HH	2HH	3HH	4HH	5HH	6HH
1HT	2HT	3HT	4HT	5HT	6HT
1TH	2TH	3TH	4TH	5TH	6TH
1TT	2TT	3TT	4TT	5TT	6TT

24 outcomes

14. You flip a coin and draw a marble at random from a bag containing two purple marbles and one white marble. Labels: (H=heads, T=tails, P1=first purple, P2=second purple, W=white)

H	T
HP1	TP1
HP2	TP2
HW	TW

6 outcomes

😊 15. Two number cubes are rolled.
Find their sums.

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

36 outcomes

16. Two number cubes are rolled.
Find their products.

	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36

36 outcomes

😊 17. You draw two marbles without replacement from a bag containing three green marbles and four black marbles.
Labels: (G1=first green, G2=second green, G3=third green, B1=first black, B2=second black, B3=third black, B4=fourth black)

G1	G2	G3	B1	B2	B3	B4
G1 G2	G2 G1	G3 G1	B1 G1	B2 G1	B3 G1	B4 G1
G1 G3	G2 G3	G3 G2	B1 G2	B2 G2	B3 G2	B4 G2
G1 B1	G2 B1	G3 B1	B1 G3	B2 G3	B3 G3	B4 G3
G1 B2	G2 B2	G3 B2	B1 B2	B2 B1	B3 B1	B4 B1
G1 B3	G2 B3	G3 B3	B2 B3	B2 B3	B3 B2	B4 B2
G1 B4	G2 B4	G3 B4	B1 B4	B2 B4	B3 B4	B4 B3

42 outcomes

+ 2

18. You spin a spinner twice that has four equal sections of blue, yellow, red, and green.
Labels: (B=blue, Y=yellow, R=red, G=green)

B	Y	R	G
BY	YB	RB	GB
BR	YR	RY	GY
BG	YG	RG	GR
BB	YY	RR	GG

16 outcomes

19. You have one red apple, and three green apples in a bowl. You randomly select one apple to eat now and another apple for your lunch.
Labels: (r=red apple, G1=first green apple, G2=second green apple, G3=third green apple)

R	G1	G2	G3
R G1	G1 R	G2 R	G3 R
R G2	G1 G2	G2 G1	G3 G1
R G3	G1 G3	G2 G3	G3 G2

12 outcomes

20. A student is taking a multiple-choice test where each question has four choices. The student randomly guesses the answers to the five question test. Labels: (C=correct, I=incorrect)

0 correct	1 correct	2 correct	3 correct	4 correct	5 correct
IIIII	CIIII	CCII	CCCI	CCCCI	CCCCC
	ICIII	CICII	CCIC	CCCCC	
	IICII	CICCI	CCIC	CCCCC	
	IIICI	CICCI	CCIC	CCCCC	
	IIIC	ICCCI	ICCCC	ICCCC	
		ICCCI	ICCCC		
		ICCCI	ICCCC		
		ICCCI	ICCCC		
		ICCCI	ICCCC		
		ICCCI	ICCCC		

32 outcomes

21. A vase contains four white roses and one red rose. You randomly select two roses to take home.
Labels: (W1=first white rose, W2=second white rose, W3=third white rose, W4=fourth white rose, R=red rose)

W1	W2	W3	W4	R
W1 W2	W2 W1	W3 W1	W4 W1	R W1
W1 W3	W2 W3	W3 W2	W4 W2	R W2
W1 W4	W2 W4	W3 W4	W4 W3	R W3
W1 R	W2 R	W3 R	W4 R	R W4

20 outcomes

+ 1

+ 2

Week #6 Packet due - hand in

Go back over independent vs
dependent events finding probabilities
with and without replacement...

Put this on blue sheet...

Notation:

\cup = "or"

union

$$P(5 \cup 6) \\ = \frac{2}{6}$$

\cap = "and"

intersection

$$P(2 \cap \text{red}) = \frac{2}{52}$$

Name: _____ Hour _____ Probability With and Without Replacement & Independent or Dependent

Independent Events: $P(A \text{ and } B) = P(A) \cdot P(B)$
 Dependent Events: $P(A \text{ and } B) = P(A) \cdot P(B|A)$

2 + events

30 total

You have a jar of gumballs: 4 red, 9 green, 8 blue, 6 yellow, and 3 white. One gumball is drawn randomly. Find the following Probabilities and write as a reduced fraction and as a percent.

1. P(white) $\frac{3}{30} = \frac{1}{10} = 10\%$

2. P(green) $\frac{9}{30} = \frac{3}{10} = 30\%$

3. P(blue \cup yellow) $\frac{14}{30} = \frac{7}{15} = 47\%$

4. P($\overline{\text{Red}}$) $\frac{26}{30} = \frac{13}{15} = 87\%$
 30 - 4 red
 P(not red)

You roll a 6 sided die one time. Find the following probabilities. Write as a reduced fraction and as a percent.

5. P(7) 0

6. P(1 \cup 2) $\frac{2}{6} = \frac{1}{3} = 33.3\%$

7. P(odd number) $\frac{3}{6} = \frac{1}{2} = 50\%$

8. P($\overline{6}$) $\frac{5}{6} = 83\%$

8 markers

In your math class there are the following white board markers at the board: 2 green, 2 blue, 2 red, 1 purple, and 1 black. One student randomly chooses a marker and then replaces it. The second student then chooses a marker. What is the probability of the students randomly choosing the colors listed below? Write as a percent

9. P(A, B) $\frac{2}{8} \cdot \frac{2}{8} = 6.25\%$
 = P(A) · P(B)

10. P(red, purple) $\frac{2}{8} \cdot \frac{1}{8} = 3.1\%$

11. P(black, black)

$\frac{1}{8} \cdot \frac{1}{8} = \frac{1}{64} = 1.5\%$

12. P(purple, green)

$\frac{1}{8} \cdot \frac{2}{8} = \frac{2}{64} = 3.1\%$

16 total

In your sock drawer you have 10 pairs of white socks, 4 pairs of black, and 2 pairs of brown. You randomly choose a pair of socks each day. Sometimes you don't replace them because they are dirty. You choose another pair of socks the next day. Find the probability of the following situations. Write the probability as a reduced fraction.

13. P(white, white) with replacement Ind

$\frac{10}{16} \cdot \frac{10}{16} = \frac{25}{64}$

14. P(white, black) without replacement Dep

$\frac{10}{16} \cdot \frac{4}{15} = \frac{1}{6}$

15. P(black, brown) without replacement Dep

$\frac{4}{16} \cdot \frac{2}{15} = \frac{1}{30}$

16. P(brown, brown) without replacement Dep

$\frac{2}{16} \cdot \frac{1}{15} = \frac{1}{120}$

17. P(white, white, white) with replacement

$\frac{10}{16} \cdot \frac{10}{16} \cdot \frac{10}{16} = \frac{125}{512}$

18. P(white, black, brown) with replacement

$\frac{10}{16} \cdot \frac{4}{16} \cdot \frac{2}{16} = \frac{5}{256}$

19. P(black, white, white) without replacement

$\frac{4}{16} \cdot \frac{10}{15} \cdot \frac{9}{14} = \frac{3}{28}$

20. P(brown, brown, brown) with replacement

$\frac{2}{16} \cdot \frac{2}{16} \cdot \frac{2}{16} = \frac{1}{512}$

Determine if the following events are dependent or independent. Then calculate the probability of each.

21. Selecting a glazed donut from an assortment of ~~twelve~~¹⁶ donuts, 4 glazed, 4 with sprinkles, 4 maple bars, and 4 cake donuts. Then eating it, and then selecting a maple bar from the same box. Dep

A: glazed
B: maple

$P(\text{glazed, maple}) = \frac{4}{16} \cdot \frac{4}{15} = 6.7\%$

22. Given a bag of marbles with 2 red, 3 green and 2 blue. What is the probability of choosing a red marble keeping it, then choosing another red marble? Dep

$P(\text{red, red}) = \frac{2}{7} \cdot \frac{1}{6} = 4.8\%$

23. Rolling a 3 on a dice and then drawing a red card from a deck of cards.

$P(3, \text{red}) = \frac{1}{6} \cdot \frac{26}{52} = 8.3\%$

24. You are choosing two cards from a deck. The first card is a queen, if you keep that card what is the probability that the second card is a face card?

$\frac{11}{51} = 2.2\%$

25. Flipping a coin, and getting tails both times.

$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4} = 25\%$

Independent Events: $P(A \text{ and } B) = P(A) \cdot P(B)$

Dependent Events: $P(A \text{ and } B) = P(A) \cdot P(B|A)$

26. Events A and B are independent. Find the missing probability

$P(A) = .73$
 $P(B) = .38$
 $P(A \text{ and } B) = .28$

$.28 = .73 \cdot P(B)$
 $.73 \cdot .38 = .28$

$P(A) = .15$
 $P(B) = .62$
 $P(A \text{ and } B) = .093$

$.093 = (.15) \cdot (.62)$

$P(A \text{ and } B) = P(A) \cdot P(B)$
 $.33 = P(A) \cdot (.85)$
 $.33 = .39 \cdot .85$
 $P(A) = .39$
 $P(B) = .85$
 $P(A \text{ and } B) = .33$

27. Events A and B are dependent. Find the missing probability

$P(A) = .37$
 $P(B|A) = .18$
 $P(A \text{ and } B) = .067$

$.067 = (.37) \cdot (.18)$

$P(A) = .93$
 $P(B|A) = .61$
 $P(A \text{ and } B) = .57$

$.57 = P(A) \cdot P(B|A)$
 $.57 = .93 \cdot .61$

$.35 = .41 \cdot P(B|A)$
 $.35 = .41 \cdot .85$
 $P(B|A) = .85$
 $P(A \text{ and } B) = .35$

28. In a random sample of 1000 Ridgeline students, a study found that 40.7% were involved in a club and 21.8% studied 4 hours per day. When they reported their findings, the research group indicated that 41.4% of students were either involved in a club or they studied 4 hours per day. Given this information, what is the probability that a student is involved in a club and studies 4 hours per day?

29. In a random sample of 150 Ridgeline Cross Country runners, a study found that 72% of them ran five days a week and 18% of them did their core exercises 5 days a week. When they reported their findings, the research group indicated that 79.4% of the athletes either ran or did core exercises five days a week. Given this information, what is the probability that an athlete ran and did their core exercises five days a week?

Now let's try more of yesterday's ws... get out 5.2

#15 From worksheet 5.2

Determine if the events are independent or dependent. Then use the appropriate formula to determine their probability.

Ind: $P(A \text{ and } B) = P(A) \cdot P(B)$

Dep: $P(A \text{ and } B) = P(A) \cdot P(B|A)$

You play a game that involves drawing two numbers from a hat. There are 25 pieces of paper numbered from 1 to 25 in the hat. Each number is replaced after it is drawn. Find the probability that you will draw the 3 on your first draw and a number greater than 10 on your second draw.

Event A: _____

Event B: _____

Dep/Ind: _____

Probability: _____

#16 From worksheet 5.2

Determine if the events are independent or dependent. Then use the appropriate formula to determine their probability.

Ind: $P(A \text{ and } B) = P(A) \cdot P(B)$

Dep: $P(A \text{ and } B) = P(A) \cdot P(B|A)$

A drawer contains 12 white socks and 8 black socks. You randomly choose 1 sock and do not replace it. Then you randomly choose another sock. Find the probability that both socks are white.

Event A: _____

Event B: _____

Dep/Ind: _____

Probability: _____

#18 From worksheet 5.2

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

18. Events A and B are independent. Suppose $P(B) = 0.4$ and $P(A \text{ and } B) = 0.13$. Find $P(A)$.

#19 From worksheet 5.2

$$P(A \text{ and } B) = P(A) \cdot P(B|A)$$

19. Events A and B are dependent. Suppose $P(B|A) = 0.6$ and $P(A \text{ and } B) = 0.15$. Find $P(A)$.

#20 From worksheet 5.2

20. Events A and B are independent. Describe and correct the error in finding $P(A \text{ and } B)$.



$$\begin{aligned} P(A) &= 0.6 & P(B) &= 0.2 \\ P(A \text{ and } B) &= 0.6 + 0.2 = 0.8 \end{aligned}$$

#23 From worksheet 5.2

At a school, 43% of students attend the homecoming football game. Only 23% of students go to the game and the homecoming dance. What is the probability that a student who attends the football game also attends the dance?

Event A: _____

Event B: _____

Dep/Ind: _____

Probability: _____

due tomorrow

Name: _____

Sec. 5.2
Independent/Dependent Events

Determine if the following are dependent or independent events.

1. Hours you study for a test and your grade on that test
2. Flipping a coin and rolling a die
3. Parking in a handicap parking space and getting a parking ticket
4. Drawing an ace in a standard deck, put it back and then draw another
5. Jeremy took the SAT on Saturday and scored a 1350. The following week he took the ACT and scored a 23.
6. A card is randomly chosen from a deck of 52 cards, replaced, and a second card is chosen.
7. In a game, you roll an even number on a die and then you spin a spinner numbered 1 through 5 and get an odd number.
8. An ace is drawn, without replacement, from a deck of 52 cards. Then, a second ace is drawn.

List event A and event B. Then determine if the following events are independent using the formula:

$$P(A \text{ and } B) = P(A) \cdot P(B).$$

9. Use the sample space from number 14 to determine whether randomly getting a head on the coin and a purple marble are independent events.
Event A: _____
Event B: _____
10. Use the sample space from number 17 to determine whether randomly drawing two black marbles are independent events.
Event A: _____
Event B: _____
11. Use the sample space from number 18 to determine whether randomly spinning blue and then green are independent events.
Event A: _____
Event B: _____

12. Use the sample space from number 19 to determine whether randomly selecting a green apple first and randomly selecting a green apple second are independent events.
 Event A: _____
 Event B: _____
13. Use the sample space from number 20 to determine whether randomly guessing question 1 correctly and question 2 correctly are independent events.
 Event A: _____
 Event B: _____
14. Use the sample space from number 21 to determine whether randomly selecting a white rose first and randomly selecting a white rose second are independent events.
 Event A: _____
 Event B: _____

Determine if the events are independent or dependent. Then use the appropriate formula to determine their probability.

Independent Events: $P(A \text{ and } B) = P(A) \cdot P(B)$

Dependent Events: $P(A \text{ and } B) = P(A) \cdot P(B | A)$

15. You play a game that involves drawing two numbers from a hat. There are 25 pieces of paper numbered from 1 to 25 in the hat. Each number is replaced after it is drawn. Find the probability that you will draw the 3 on your first draw and a number greater than 10 on your second draw.
 Event A: _____
 Event B: _____
 Dep/Ind: _____
 Probability: _____
16. A drawer contains 12 white socks and 8 black socks. You randomly choose 1 sock and do not replace it. Then you randomly choose another sock. Find the probability that both socks are white.
 Event A: _____
 Event B: _____
 Dep/Ind: _____
 Probability: _____

17. A word game has 100 tiles, 98 of which are letters and 2 of which are blank. The numbers of tiles of each letter are shown. You randomly draw 1 tile, set it aside, and then randomly draw another tile. Find the probability that the first tile is a consonant and the second tile is a vowel.

A - 9	H - 2	O - 8	V - 2
B - 2	I - 9	P - 2	W - 2
C - 2	J - 1	Q - 1	X - 1
D - 4	K - 1	R - 6	Y - 2
E - 12	L - 4	S - 4	Z - 1
F - 2	M - 2	T - 6	Blank - 2
G - 3	N - 6	U - 4	Blank

- Event A: _____
 Event B: _____
 Dep/Ind: _____
 Probability: _____

18. Events A and B are independent. Suppose $P(B) = 0.4$ and $P(A \text{ and } B) = 0.13$. Find $P(A)$.

19. Events A and B are dependent. Suppose $P(B | A) = 0.6$ and $P(A \text{ and } B) = 0.15$. Find $P(A)$.

20. Events A and B are independent. Describe and correct the error in finding $P(A \text{ and } B)$.

X $P(A) = 0.6$ $P(B) = 0.2$
 $P(A \text{ and } B) = 0.6 + 0.2 = 0.8$

21. A shelf contains 3 fashion magazines and 4 health magazines. You randomly choose one to read, set it aside, and randomly choose another for your friend to read. Describe and correct the error in finding the probability that the first magazine is fashion and the second magazine is health.

X $P(A) = \frac{3}{7}$ $P(B | A) = \frac{4}{7}$
 $P(A \text{ and } B) = \frac{3}{7} \cdot \frac{4}{7} = \frac{12}{49} \approx 0.245$

22. You randomly select three cards from a standard deck of 52 playing cards. What is the probability that all three cards are face cards when...

- a. You replace each card before selecting the next card.
- b. You do not replace each card before selecting the next card.

23. At a school, 43% of students attend the homecoming football game. Only 23% of students go to the game and the homecoming dance. What is the probability that a student who attends the football game also attends the dance?

Event A: _____
 Event B: _____
 Ind/Dep: _____
 Probability: _____

24. A meteorologist claims that there is a 70% chance of rain. When it rains, there is a 75% chance that your softball game will be rescheduled. Your friend believes the game is more likely to be rescheduled than played. Is your friend correct? Give a mathematical explanation using the formulas for independent or dependent events.

Event A: _____
 Event B: _____
 Ind/Dep: _____
 Probability: _____

Michelle's ws here...

Look up last year's lesson that used this ws and do similar stuff..