

Part 1. Section 12-3

1. If John can pick from 4 flowers and 2 spots in his yard, how many ways can he plant his flowers?

8

2. Calculate each.

a. $5!$ 120

b. $8!$ 40320

c. $0!$ 1

3. How many ways can 7 students sit in the Magnum at Cedar Point?

5040

4. Calculate each.

a. 7P_2

b. ${}^{12}P_4$

c. 9P_3

42

11880

504

5. 26 students compete in a track meet. How many ways can prizes be awarded for 1st, 2nd, and 3rd, place?

15600

6. Jimmy has to pick a friend to be his buddy for the field trip, and have an alternate. How many ways can he pick the friend and alternate if he has 8 friends to choose from?

56

7. Calculate each.

a. ${}^{10}C_4$

b. ${}^{13}C_3$

c. 6C_2

d. 5C_5

210

286

15

1

8. 12 students are in a class. How many ways can 2 kids be chosen to receive detentions?

66

9. Mr. Etue needs to choose 3 kids to help in the office. How many ways can he choose 3 kids from a class of 22?

1540

Part 2 Basic Probability

10. What is the probability of something that is sure to happen? 1

11. What is the probability of something that is impossible to happen? 0

12. Most probabilities are between 0 and 1.

13. A spinner has 12 sections numbered from 1-12. Find each probability.

a. spinning a 5
5/12

b. spinning an odd number
1/2

c. spinning a 13
0

d. 2 or 3
1/6

e. number from 1-12
1

f. multiple of 4
1/4

14. For a standard deck of cards a card is drawn. Find each probability:

a. P(queen)=
1/13

b. P(heart)=
1/4

c. P(face card)=
3/13

d. P(8) =
1/13

e. P(3-7)=
5/13

d. p(jack and king)=
1/109

Part 3 Section 12-1

15. What does it mean when 2 events are mutually exclusive? NO OVERLAP

16. What is the formula to find P(A or B) if the events are not mutually exclusive? $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

17. If the events are mutually exclusive, what will P(A and B) be? 0

18. Find the indicated probability and then state whether A and B are mutually exclusive. (show formula and all work)

a. $P(A) = \frac{4}{11}$
 $P(B) = ?$
 $P(A \text{ or } B) = \frac{8}{11}$
 $P(A \text{ and } B) = \frac{2}{11}$
 $\frac{6}{11}$

b. $P(A) = 28\%$
 $P(B) = 14\%$
 $P(A \text{ or } B) = 42\%$
 $P(A \text{ and } B) = ?$
0

c. $P(A) = \frac{12}{18}$
 $P(B) = \frac{7}{18}$
 $P(A \text{ or } B) = ?$
 $P(A \text{ and } B) = \frac{5}{18}$
 $\frac{14}{18}$

$$P(A) = .4$$

$$P(B) = .35$$

$$P(A \text{ or } B) = .5$$

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

$$.25$$

e.

$$P(A) = .6$$

$$P(B) = .2$$

$$P(A \text{ or } B) = ?$$

$$P(A \text{ and } B) = .1$$

$$.7$$

f.

$$P(A) = .25$$

$$P(B) = ?$$

$$P(A \text{ or } B) = .7$$

$$P(A \text{ and } B) = 0$$

$$.45$$

19. Find $P(A')$

a. $P(A) = .39$

$$.61$$

b. $P(A) = \frac{5}{13}$

$$8/13$$

c. $P(A) = .92$

$$.08$$

20. From a standard deck of cards, find each.

a. $P(\text{not a jack}) =$

$$12/13$$

b. $P(\text{not clubs}) =$

$$3/4$$

c. $P(\text{not red}) =$

$$1/2$$

21. In a class, 100 students were surveyed. 45 said they like pizza, 34 like hamburgers, 36 like mac and cheese, 12 like nachos.

a. 88 kids like hamburgers or mac & cheese. What is the probability that they liked hamburgers and mac & cheese?

$$.1224$$

b. 20 kids like hamburgers and nachos. How many kids like hamburgers or nachos?

$$26$$

Part 4 Section 12-2

22. Explain the difference between independent and dependent events.

NO IMPACT ON NEXT EVENT

23. A bag contains 6 blue marbles, 8 red marbles, 2 yellow marbles, and 3 green marbles, and 1 purple marble. A marble is drawn, then another marble is drawn. Find each of the following probabilities with replacement and without replacement.

a. (red, red)

with r = $4/25$

without r = $14/95$

b. (yellow, blue)

with r = $3/100$

without r = $3/95$

c. (green, yellow)

with r = $3/200$

without r = $3/190$

d. (green, green)

with r $9/400$

without r $3/190$

e. (blue, red)

with r $3/25$

without r $21/190$

f. (purple, purple)

with r $1/400$

without r 0

24. Events A and B are independent. Find the indicated probability.

a. $P(A) =$

$P(B) = 2/3$

$P(A \text{ and } B) = 1/2$

$3/4$

b. $P(A) =$

$P(B) = .4$

$P(A \text{ and } B) = .08$

$.2$

c. $P(A) = .6$

$P(B) =$

$P(A \text{ and } B) = .6$

1

25. Events A and B are dependent. Find the indicated probability.

a. $P(A) = .2$

$P(B/A) = .3$

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

$.06$

b. $P(A) =$

$P(B/A) = .2$

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

$.75$

c. $P(A) = .3$

$P(B/A) =$

$P(A \text{ and } B) = .27$

$.9$

26. If a card is picked from a deck, then another card is picked, find each probability 1) with replacement and 2) without replacement

a. $P(\text{king and jack})$

1) $1/169$

2) $4/663$

b. $P(\text{red and black})$

1) $1/4$

2) $13/51$

c. $P(\text{ace and ace})$

1) $1/169$

2) $1/221$