

8.1

4

48

8

a. 10^6 b. 10^3 c. 5^6 d. 5^6

10

a. 125 b. 60

12

a. 480 b. 1372

14

80

16

36504

18

 2^3

20

0

22

 $2^6 + 2^6$

24

 $2^5 + 2^3$

26

 $36^4 - (26^4 + 10^4)$

8.2

2

a.

b.

4

6

8

8.4.

2

a. $P(6, 4) = 360$ b. $\{1, 2, 3, 4\}$ c. $P(6, 6) = 720$ d. $\{1, 2, 3, 4, 5, 6\}$

4

a. $9!$ b. $4! \cdot 3! \cdot 2!$

6

 $P(10, 3) = 720$

8

a. $13!$ b. $7! \cdot 6!$

10

a. $C(n, 0) = 1$ b. $C(n, 1) = n$ c. $C(n, n) = 1$ d. $C(n, n-1) = n$ e. $C(n, n-2) = \frac{n(n-1)}{2}$

12 36

14 66

16 a. 128 b. 1 c. 35 d. 21 e. 7

18 10

20 56

22 32

26 35

8.5

2 1400

4 1200

6 a. 720 b. 210 c. 60

8 a. 1001 b. 120 c. 600

10 a. 495 b. 270 c. 70 d. 460

9.1

$$6 \quad (x-y)^7 = \binom{7}{0}x^7 + \binom{7}{1}x^{7-1}(-y)^1 + \binom{7}{2}x^{7-2}(-y)^2 + \binom{7}{3}x^{7-3}(-y)^3 \\ + \binom{7}{4}x^{7-4}(-y)^4 + \binom{7}{5}x^{7-5}(-y)^5 + \binom{7}{6}x^{7-6}(-y)^6 + \binom{7}{7}x^{7-7}(-y)^7$$

$$= x^7 - 7x^6y + 21x^5y^2 - 35x^4y^3 + 35x^3y^4 - 21x^2y^5 + 7xy^6 - y^7$$

$$10 \quad 32x^5 - 80x^4y + 80x^3y^2 - 40x^2y^3 + 10xy^4 - y^5$$

$$12 \quad -280x^{12}y^3$$

$$14 \quad 1920$$

9.2

2 1260

4 110

6 121

8 2520

10 21772500

12 1001

16 15840

20 5005

10.1

2 a $\frac{1}{6}$ b. $\frac{7}{36}$ c. yes

4 highest $P(E) = \frac{1}{9}$

6 $\frac{5}{16}$

8 $\frac{3}{10}$

10 $P(F) = 0.296$

12 $P(F) = 0.002$

16 $\frac{28}{45}$

18 $\frac{1}{5}$

20 no, there does not exist any uniform probability function on countably infinite sample space

22 a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. $\frac{1}{8}$ d. $\frac{1}{2^n}$ e. 0

24 probability of winning is $\frac{5}{11}$

10.2

2 a. $\frac{1}{8}$ b. $\frac{1}{4}$ c. $\frac{1}{2}$ d. 1 e. $\frac{1}{6}$ f. 0

4 yes, events are linearly independent

6 $\frac{3}{16}$

8 no, not independent

10 $\frac{1}{4}$

12 $\frac{1}{8}$

14 a. $\frac{18}{25}$ b. $\frac{13}{50}$ c. $\frac{1}{50}$

16 $\frac{3}{5}$

18 $\frac{1}{7}$

20 $\frac{1}{2}$

22 $\frac{1}{5}$

24 a. $\frac{5}{6}$ b. yes, linearly independent