

Unit 27.1

3. $\{(1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (2,1), (2,2), (2,3), (2,4), (2,5), (2,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (4,1), (4,2), (4,3), (4,4), (4,5), (4,6), (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (6,1), (6,2), (6,3), (6,4), (6,5), (6,6)\}$
4. 20 ways 6. 18 ways
7. $\{1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H, 5A, 5B, 5C, 5D, 5E, 5F, 5G, 5H\}$
8. 40 ways 9. 80 ways 10. d 11. a) 64 ways b) 210 ways

Unit 27.2

1. 120 ways 2. 10 ways; combination 3. a) 20 ways (combination)
b) 5,040 ways (permutation) c) 220 ways (combination)
4. 120 ways (combination) 5. 720 ways 6. 560 ways
7. 110,320 ways 8. c 9. with order=720; without order=120
10. 24 ways

Unit 27.3

1. a) $\frac{1}{6}$ b) $\frac{1}{2}$ c) $\frac{2}{3}$ d) $\frac{5}{6}$ 2. a) $\frac{1}{3}$; 0.333; 33%
- b) $\frac{1}{4}$; 0.25; 25% c) $\frac{5}{12}$; 0.42; 42% d) $\frac{1}{6}$; 0.75; 75%
- e) $\frac{1}{6}$; 0.17; 17% f) $\frac{2}{3}$; 0.667; 67% g) d
3. a) 10 b) $\frac{1}{2}$ c) $\frac{7}{10}$ d) $\frac{1}{2}$ 4. c 5. no

Unit 27.4

1. a) $\frac{1}{50}$ b) 5 times c) 45 times 2. 360 times 3. $\frac{1}{5}$; 69 times
4. $\frac{1}{3}$ 5. $\frac{1}{8}$ 6. 360 times 7. $\frac{1}{5}$
8. i) $\frac{6}{11}$ ii) b 9. $\frac{1}{6}$ 10. $\frac{50}{450} = \frac{1}{9}$

Unit 27.5

1. a) $\frac{45}{196}$ b) $\frac{25}{196}$ 2. a) $\frac{45}{182}$ b) $\frac{36}{91}$ 3. a) $\frac{8}{33}$ b) $\frac{1}{33}$
- c) $\frac{1}{182}$ d) $\frac{4}{13}$ e) $\frac{4}{182}$ f) $\frac{8}{91}$ 4. $\frac{72}{324}$ 5. $\frac{72}{306}$
6. a) $\frac{1}{18}$ b) $\frac{25}{144}$ c) $\frac{1}{36}$ d) $\frac{5}{36}$ 7. b

Unit 27.6

1. RRR, RRB, RBR, RBB, BRR, BRB, BBR, BBB 2. 12 ways
4. 60 codes
5. 4 combination 6. 27 choices

Unit 27.7

2. 216
 3. 90 ways
 4. 40,320 ways
 5. 36 ways
 6. a) permutation b) combination
 7. 120; 720
 8. $\frac{5}{10} = \frac{1}{2}$
 9. a) $\frac{1}{4}$ b) $\frac{13}{16}$
 10. about 82 times
 11. $\frac{56}{969}$
 12. $\frac{384}{6,859}$
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