

Section 6.2: Combinations and Permutations

Solutions

1. 5040

2. 40320

3. 1 663 200

4. 90

5. 495

6. 15 504

7. 303 600

8. 24 and 4

9. 12 650

10. 10 and 10

11. ${}_5P_5 = 120$ (or you could just say this is $5 \times 4 \times 3 \times 2 \times 1 = 5! = 120$)

12. ${}_8P_8 = 40320$

13. ${}_{50}P_3 = 117600$ (Yes, for nitpickers from hell, it should be a “permutation” lock.)

14. a) ${}_{10}P_4 = 5040$ b) $10^4 = 10\,000$

15. ${}_{52}C_5 = 2598960$

16. ${}_{49}C_6 = 13,983,816$

17. total = (total choices math) \times (total choices physics) = ${}_{25}C_3 \cdot {}_9C_2 = 82,800$

18. ${}_4P_4 = 24$

19. ${}_{365}P_3 = 48\,228\,180$

20. ${}_{28}C_4 = 20,475$

21. ${}_6P_3 = 120$

22. a) ${}_6P_3 = 120$

b) ${}_6C_3 = 20$

23.

a) ${}_{25}C_4 = 12650$

b) ${}_{20}C_3 {}_5C_1 = 5700$

c) ${}_{25}P_4 = 303,600$

24. ${}_{25}C_2 {}_{52}C_2 = 397,800$