Answer Key for Practice Questions on Counting (Week 1)

Tutorial Questions

1. (Chp6.1, Q3) See https://youtu.be/oyjV_00AreA
    a. 4^{10}
    b. 5^{10}

2. (Chp6.1, Q23) See https://youtu.be/27TIT9b-ioQ
    a. 128
    b. 450
    c. 9
    d. 675
    e. 450
    f. 450
    g. 225
    h. 75

3. (Chp6.1, Q29) See https://youtu.be/fu6DRm9d_HY
    52,457,600

4. (Chp6.1, Q45) See https://youtu.be/Y0ygybbsAdY
    60

5. (Chp6.1, Q47) See https://youtu.be/2994qKcnNxM
    a. 240
    b. 480
    c. 360

6. (Chp6.3, Q3) See https://youtu.be/uEweJl1OHjg
    720

7. (Chp6.3, Q13) See https://youtu.be/H9AQZlSx_g0
    $2(n!)^2$

8. (Chp6.3, Q19) See https://youtu.be/9jI_AJEpCLw
    a. 1024
    b. 45
    c. 176
    d. 252

9. (Chp6.3, Q23) See https://youtu.be/VbPK-Tve_lw
    609,638,400

10. (Chp6.3, Q27) See https://youtu.be/5t6w7F9bz5Q
    a. 12,650
    b. 303,600

11. Rounded answers are given below for reference, but you are expected to produce the formulae.
    See https://youtu.be/MkuqH3BFbZ0
    a. 1.87×10^{20}
    b. 1.02×10^{20}

12. Rounded answers are given below for reference, but you are expected to produce the formulae.
    See https://youtu.be/QyOt9tcrsB8
      a. 2.43×10^{18} 20!
      b. 1.32×10^{11} (10C5 x 10C5 x 4! x 5! / 2) x (5C5 x 5C5 x 4! x 5! / 2)

Extra Self-Practice Questions

13. (Chp6.1, Q5) 42

14. (Chp6.1, Q24)
      a. 1000
      b. 4500
      c. 4536
      d. 6000
      e. 2829
      f. 6171
      g. 1543
      h. 257

15. (Chp6.1, Q30) $(26^3 \times 10^3) + (26^4 \times 10^2)$

16. (Chp6.1, Q44) $^{10}C_4 \times 3! / 2$

17. (Chp6.1, Q46)
      a. $^9C_5 \times 6!$
      b. $^8C_4 \times 6!$
      c. $^8C_5 \times 6! \times 2$

18. (Chp6.3, Q7) 15,120

19. (Chp6.3, Q15) 65,780

20. (Chp6.3, Q18)
      a. $2^8 = 256$
      b. $^8C_3$
      c. $^8C_3 + {}^8C_4 + {}^8C_5 + {}^8C_6 + {}^8C_7 + {}^8C_8$
      d. $^8C_4$

21. (Chp6.3, Q24) 10! x $^{11}C_6$ x 6!

22. (Chp6.3, 33) 54,600

23.
      a. 2920
      b. 2.38×10^{15} (you are expected to produce the formula)

24.
      a. (i) 462, (ii) 25
      b. 1360800
      c. 2257920

~End