PROBABILITY
PERFORMANCE TASK

K19　A13　C10

Reduce ALL fractions to lowest terms

1.　[K] State the possible outcomes of the following situations.　❹

　　a)　Flipping a coin once.　Ⓗ or Ⓣ　　2 possible

　　b)　Rolling one die.　⚀ or ⚁ or ⚂ or ⚃ or ⚄ or ⚅　6 possible

　　c)　Having two babies.　BB, BG, GG, GB

　　d)　Outcome of a soccer game.　Ⓦ or Ⓛ or Ⓣ
　　　　　　　　　　　　　　　　　　　win　　lose　　Tie

2.　[K] Complete the following chart for the sum of two dice.　❷

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

3.　[K] Using the chart, determine the probability of each situation.　❹　→ 2dp
　　(state your answers as a **decimal**, rounded to the hundredth)

　　a)　Getting a sum of 8 on two dice.　$P(8) = \frac{5}{36} \doteq 0.14$

　　b)　Getting a sum of 2 or 11 on two dice.　$P(2 \text{ or } 11) = \frac{1+2}{36} = \frac{3}{36} = \frac{1}{12} \doteq 0.08$

　　c)　Getting a sum on two dice that is an odd number.　$P(odd) = \frac{18}{36} = 0.5$

　　d)　Getting a sum of 15 on two dice.　$P(15) = \frac{0}{36} = 0$

4. [K] Determine the probability of … State your answers as a **fraction** and a **percentage.**❸

    a) Getting an even number when rolling one die. $P(even) = \frac{3}{6} = \frac{1}{2} = 50\%$

    b) Getting a three when rolling one die. $P(three) = \frac{1}{6} = 0.166 = 16.6\%$

    c) Having twins that are both boys.

    $$\frac{1}{4} = 0.25 = 25\%$$
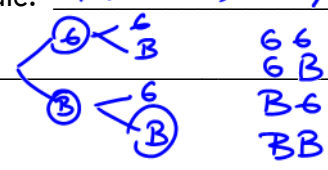
5. [K] Complete the following tree diagram for flipping a coin three times and write out each of the possible outcomes on the right. ❹
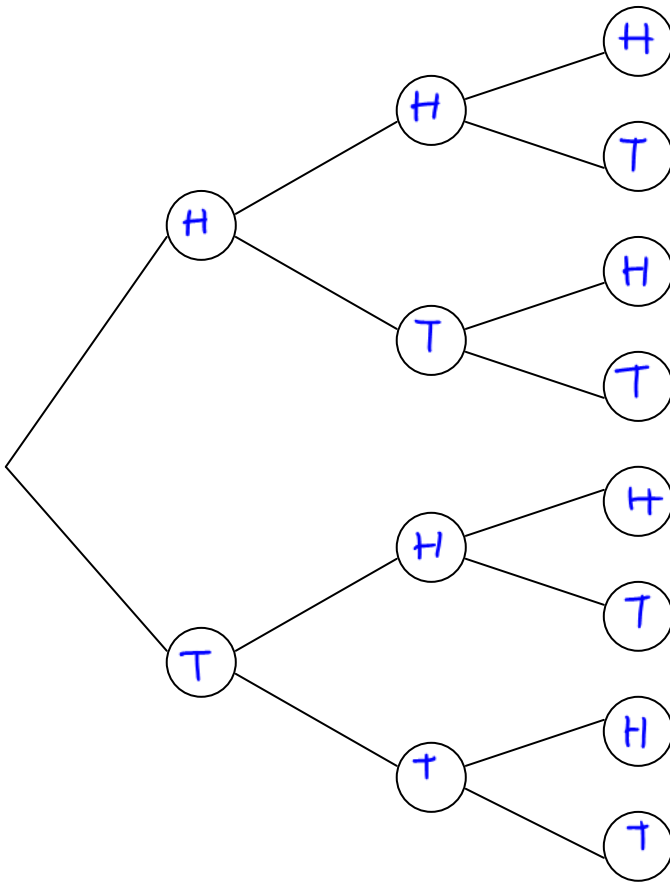
Possibilities

① H H H
② H H T
③ H T H
④ H T T
⑤ T H H
⑥ T H T
⑦ T T H
⑧ T T T

6. [K] Using the above tree diagram determine the probability of … ❷

    a) Getting all three heads. $\frac{1}{8} = 0.125 = 12.5\%$

    b) Getting at least one tail. $\frac{7}{8} = 0.875 = 87.5\%$

    c) Getting EXACTLY one head. $\frac{3}{8} = 0.375 = 37.5\%$

7. [A] A bag contains 5 red marbles, 2 blue marbles and 4 yellow marbles. If one marble is drawn at random from the bag, determine the probability of... ❸

    [handwritten: $5/11 = 0.454 = 45.4\%$ $(R) + (B) + (Y) = 11$, with 5, 2, 4 above circles]

    a) Getting a red marble. _____ *[handwritten: $5/11 = 0.454 = 45.4\%$]*

    b) Getting an orange marble. _____ *[handwritten: $0/11 = 0\%$]*

    c) **not** getting a yellow marble. _____ *[handwritten: $7/11 = 0.636 = 63.6\%$]*

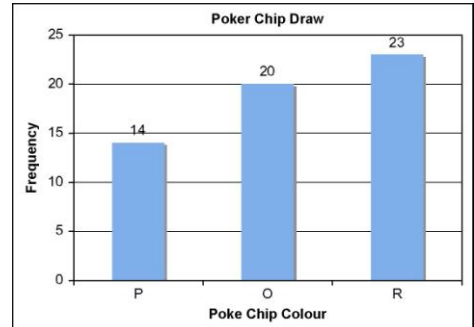   *[handwritten: circles labeled W, Bk, B with 4, 6, 4 above]*

8. [A] A sock drawer contains 14 pairs of socks. Four of the pairs of socks are white. Six of the pairs of socks are brown and the remaining socks are black. ❸

    [handwritten: $4/14 = 2/7 = 0.286 = 28.6\%$]

    a) Determine the probability of getting a pair of socks that is brown. _____

    b) Determine the probability of getting a pair of socks that is **not** black or *[handwritten: White]* brown. *[handwritten: $4/14 = 28.6\%$]*

    c) Determine the probability of getting a pair of socks that is pink. _____ *[handwritten: $0/14 = 0\%$]*

9. [A] A bag contains 70 poker chips: 30 purple, 25 red, and 15 orange. Jessie draws a chip, records the colour, and returns it to the bag. The results are shown in the graph. What is the **experimental** probability of drawing **each** colour? ❸

    Red: _____ *[handwritten: $\dfrac{14}{57}$]*

    Purple: _____ *[handwritten: $\dfrac{20}{57}$]*

    Orange: _____ *[handwritten: $\dfrac{23}{57}$]*

    Poker Chip Draw (bar graph: P = 14, O = 20, R = 23; x-axis: Poke Chip Colour; y-axis: Frequency)

10. [A] A basketball player made 135 of the 270 foul shots he took in 4 games.

    a) How many shots will he make in his **next game** if he attempts 30 foul shots? ❷

    [handwritten: $P(\text{foul shots}) = \dfrac{135}{270} = 50\%$]
    [handwritten: 50% of $30 = 0.5 \times 30 = 15$]
    [handwritten: ∴ He'll have 15 successful shots]

    b) How many shots will he make **this season** if he attempts 2800 foul shots? ❷

    [handwritten: 50% of $2800 = 0.5 \times 2800$]
    [handwritten: $= 1400$]
    [handwritten: ∴ He'll make 1400 shots]

11. [C] Explain one of the experiments you did this unit and what you discovered from it. ❷

Answers will very

12. [C] How you can tell what colour a spinner will land on most often just by looking at the spinner. **Explain** your answer.❷

It's   Red   because   it has   the most slices,

13. [C] Give an example of an event that has a 0 (zero) probability of happening. Explain why the probability is 0. ❷

⇒ Rolling   a 7   with   1 dic
⇒ Rolling   a sum   of   13 with   2 die.
⇒ Drawing   a black diamond   from   a deck of cards.

14. [C] Compare **differences** and **similarities** of Theoretical Probability and Experimental Probability. ❹ (Hint: 4 marks means write down 4 things)