Solutions

1. A standard die is rolled 12 times and a 2 comes up 3 times. The experimental probability of rolling a 2 with this die is

   A 0.17
   B 0.20
   C 0.25
   D 0.33

$P(2) = \frac{3}{12}$ (HCF 3)

$= \frac{1}{4}$

$\rightarrow 1 \div 4 = 0.25 \Rightarrow C$

2. A coin is tossed 10 times and comes up heads 4 times. What is the experimental probability of this coin coming up

   a) heads?
   b) tails?

4 Heads

$\Rightarrow 10 - 4 = 6$ tails

a) $P(\text{Heads}) = \frac{4}{10}$ (HCF 2)

$= \frac{2}{5}$

b) $P(\text{Tails}) = \frac{6}{10}$ (HCF 2)

$= \frac{3}{5}$

3. a) Helena successfully made 21 out of 30 free throw attempts. What is the experimental probability that she can make a successful free throw?

b) If Helena makes 5 out of the next 10 shots, what is her new overall experimental probability of scoring?

c) Helena says that she typically makes 80% of her free throws. How accurate would you say this statement is? Justify your answer.

$P(\text{success}) = \frac{21}{30}$ (HCF 3)

$= \frac{7}{10}$

$P(\text{success}) = \frac{21+5}{30+10}$

$= \frac{26}{40}$ (HCF 2)

$= \frac{13}{20}$

She is overestimating her success rate.

4. Communication The table shows the results for a mystery spinner.

Colour	Favourable Outcomes, $n(A)$
Yellow	6
Green	2
Purple	3
Blue	1

a) Determine the experimental probability of the spinner landing on each colour.

b) Draw what the spinner could look like, based on the given data.

c) Could the real spinner look different? Explain.

Total spins = 6+2+3+1 = 12

a) $P(Y) = \frac{6}{12}$ (HCF 6)

$= \frac{1}{2}$

$P(G) = \frac{2}{12}$ (HCF 2)

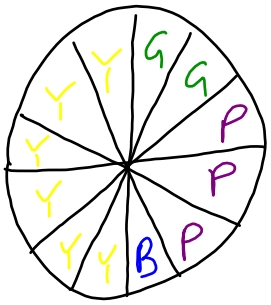
$= \frac{1}{6}$

$P(P) = \frac{3}{12}$ (HCF 3)

$= \frac{1}{4}$

$P(B) = \frac{1}{12}$

b)



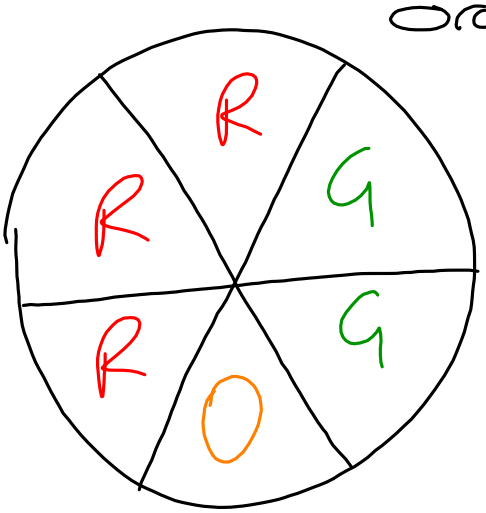
c) Yes. It could have other colours on it that haven't been landed on.

5. Open Question

a) Create the results for a mystery spinner where the experimental probability of the spinner landing on green is twice as great as landing on orange.

b) Draw what the spinner could look like, based on your data.

Colour	Tally
Red	𝍸 𝍸
Green	𝍸
Orange	111



6. An ice-cream stand owner keeps track of his cone sales over a period of several days. The table shows the results.

Flavour	Number of Sales
Vanilla	9
Chocolate	21
Raspberry ripple	43
Pralines and cream	78

a) Determine the experimental probability of a random customer ordering each flavour.

b) How could this information be useful for the ice-cream stand owner?

Total Sales = 9 + 21 + 43 + 78
= 151

a) $P(V) = \frac{9}{151} = 5.9\%$

$P(C) = \frac{21}{151} = 13.9\%$

$P(RR) = \frac{43}{151} = 28.5\%$

$P(PC) = \frac{78}{151} = 51.7\%$

b) They will know to order twice as much PC compared to RR, twice as much RR compared to C, and twice as much C compared to V.

7. **Application** A weather report claims that the PoP of a rainy day in the previous April was 70%. How many rainy days were there in April?

Literacy Link

In meteorology, the study of weather, *PoP* means the probability of precipitation. It represents the probability that precipitation (rain, snow, etc.) will occur.

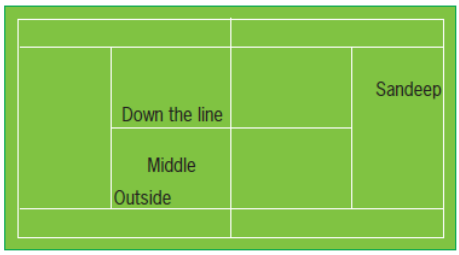
30 days in April

$\Rightarrow$ # of rainy days = # of days $\times$ P(rainy day in April)

$= 30(0.70)$

$= 21$ days

9. When Sandeep makes her first serve in tennis, she aims for one of the three regions indicated below.



The table shows the ball placements for several of her previous first serves, not counting missed serves.

Serve	Count
Down the line	3
Middle	12
Outside	25

Total of 40 serves

a) Determine the experimental probability of each of Sandeep's serve locations.

b) How could this information be useful to Sandeep's opponent?

a) $P(DL) = \frac{3}{40} = 7.5\%$

$P(M) = \frac{12}{40} = 30\%$

$P(O) = \frac{25}{40} = 62.5\%$

b) Be prepared for outside and middle serves