Questions

1. Probability, 2UG 2004 HSC 1 MC

   Which fraction is equal to a probability of 25%?

   (A) $\dfrac{1}{25}$

   (B) $\dfrac{1}{4}$

   (C) $\dfrac{1}{3}$

   (D) $\dfrac{1}{2}$

2. Probability, 2UG 2009 HSC 1 MC

   ⚡ *RAP Data - Bottom 14%: School result (91%) was 3% above state average (88%)*

   A newspaper states: 'It will most probably rain tomorrow.'

   Which of the following best represents the probability of an event that will most probably occur?

   (A) $33\dfrac{1}{3}\%$

   (B) 50%

   (C) 80%

   (D) 100%

3. Probability, 2UG 2011 HSC 15 MC

   ⚠ *RAP Data - Bottom 6%: School result (79%) was equal to state average (79%)*

   An unbiased coin is tossed 10 times.

   A tail is obtained on each of the first 9 tosses.

   What is the probability that a tail is obtained on the 10th toss?

   (A) $\dfrac{1}{2^{10}}$

   (B) $\dfrac{1}{2}$

   (C) $\dfrac{1}{10}$

   (D) $\dfrac{9}{10}$

4. Probability, 2UG 2006 HSC 1 MC

   The probability of an event occurring is $\dfrac{9}{10}$.

   Which statement best describes the probability of this event occurring?

   (A) The event is likely to occur.

   (B) The event is certain to occur.

   (C) The event is unlikely to occur.

   (D) The event has an even chance of occurring.

5. Probability, 2UG 2018 HSC 9 MC

   An experiment has three distinct outcomes, *A*, *B* and *C*. Outcome *A* occurs 50% of the time. Outcome *B* occurs 23% of the time.

   What is the expected number of times outcome *C* would occur if the experiment is conducted 500 times?

   A. 115

   B. 135

   C. 250

   D. 365

6. Probability, 2UG 2011 HSC 2 MC

Which of the following could be the probability of an event occurring?

(A) 1

(B) $\dfrac{6}{5}$

(C) 1.27

(D) 145%

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7. Probability, 2UG 2005 HSC 3 MC

Four radio stations reported the probability of rain as shown in the table.

Radio station	Probability of rain
2AT	0.53
2BW	17%
2CZ	$\dfrac{13}{25}$
2DL	0.6

Which radio station reported the highest probability of rain?

(A) 2AT

(B) 2BW

(C) 2CZ

(D) 2DL

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8. Probability, 2UG 2005 HSC 23a

There are 100 tickets sold in a raffle. Justine sold all 100 tickets to five of her friends. The number of tickets she sold to each friend is shown in the table.

Friend	Number of tickets
Danielle	45
Khalid	5
Nancy	10
Shani	14
Herman	26
Total	100

(i) Justine claims that each of her friends is equally likely to win first prize. Give a reason why Justine's statement is NOT correct. *(1 mark)*

(ii) What is the probability that first prize is NOT won by Khalid or Herman? *(2 marks)*

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9. Probability, 2UG 2007 HSC 25a

Give an example of an event that has a probability of exactly $\dfrac{3}{4}$. *(1 mark)*

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10. Probability, 2UG 2013 HSC 26c

⚠ *Part i: RAP Data - Bottom 2%: School result (4%) was -7% below state average (11%)*

The probability that Michael will score more than 100 points in a game of bowling is $\dfrac{31}{40}$.

(i) A commentator states that the probability that Michael will score less than 100 points in a game of bowling is $\dfrac{9}{40}$.
Is the commentator correct? Give a reason for your answer. *(1 mark)*

(ii) Michael plays two games of bowling. What is the probability that he scores more than 100 points in the first game and then again in the second game? *(1 mark)*

Worked Solutions

1. Probability, 2UG 2004 HSC 1 MC

$$P = \frac{25}{100} = \frac{1}{4}$$
$$\Rightarrow B$$

2. Probability, 2UG 2009 HSC 1 MC

Probably $\Rightarrow$ likelihood $> 50\%$

However $100\% =$ certainty

$\therefore$ 80% is the answer

$\Rightarrow C$

3. Probability, 2UG 2011 HSC 15 MC

Each toss is an independent event and has
an even chance of being a head or tail.

$\Rightarrow B$

4. Probability, 2UG 2006 HSC 1 MC

The event is highly likely to occur
but not certain.

$\Rightarrow A$

5. Probability, 2UG 2018 HSC 9 MC

Expectation of outcome C
$$= 1 - 0.5 - 0.23$$
$$= 0.27$$

$\therefore$ Expected times C occurs
$$= 0.27 \times 500$$
$$= 135$$
$$\Rightarrow B$$

6. Probability, 2UG 2011 HSC 2 MC

Probabilities must lie between 0 and 1.

$\Rightarrow A$

7. Probability, 2UG 2005 HSC 3 MC

Converting all probabilities to decimals

$2AT = 0.53$

$2BW = 0.17$

$2CZ = 0.52$

$2DL = 0.60$

$\Rightarrow D$

8. Probability, 2UG 2005 HSC 23a

(i) The claim is incorrect because each
of her friends bought a different number
of tickets and therefore their chances of
winning are different.

(ii) Number of tickets not sold to K or H
$$= 45 + 10 + 14$$
$$= 69$$
$\therefore$ Probability 1st prize NOT won by K or H
$$= \frac{69}{100}$$

9. Probability, 2UG 2007 HSC 25a

Choosing a red ball out of a bag that contains
3 red balls and 1 green ball.
(An infinite amount of examples are
possible).

10. Probability, 2UG 2013 HSC 26c

(i) The commentator is incorrect. The correct

statement is $P(\text{score} \leq 100) = \dfrac{9}{40}$

(ii) $P(\text{score} > 100 \text{ in both}) = \dfrac{31}{40} \times \dfrac{31}{40}$

$$= \dfrac{961}{1600}$$