

GCSE Maths: The probability scale and probability of single events (Foundation): answers

GCSE Maths - Probability - Foundation - Lesson 23.1

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch23-probability/foundation/the-probability-scale-and-probability-of-single-events/

Exercise 23A The probability scale and single events Non-calculator

1 Choose the best word from: **impossible, unlikely, even chance, likely, certain.**

(a) A fair coin lands on heads.

Answer: even chance

(b) The day after Thursday is Friday.

Answer: certain

(c) A fair die lands on 7.

Answer: impossible

(d) A bag has 1 red and 9 blue counters. A red counter is picked.

Answer: unlikely

(e) A bag has 9 red and 1 blue counter. A red counter is picked.

Answer: likely

(f) A fair die lands on a number less than 3.

Answer: unlikely

2 Write each of these as a number on the probability scale.

(a) An impossible event

Answer: 0, 0%

(b) An event with an even chance

Answer: $\frac{1}{2}$, 0.5, 50%

(c) A certain event

Answer: 1, 100%

3 Write each probability as a decimal and as a percentage.

(a) $\frac{3}{5}$

Answer: 0.6, 60%

(b) $\frac{7}{20}$

Answer: 0.35, 35%

(c) $\frac{1}{8}$

Answer: 0.125, 12.5%

(d) $\frac{9}{25}$

Answer: 0.36, 36%

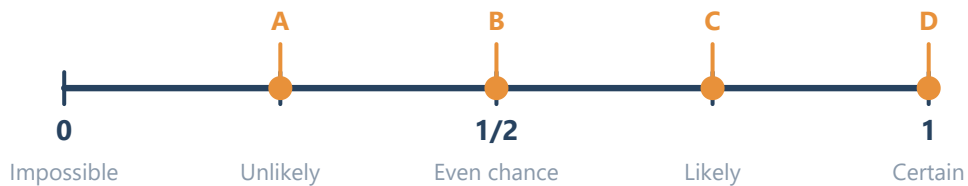
(e) $\frac{3}{4}$

Answer: 0.75, 75%

(f) $\frac{11}{50}$

Answer: 0.22, 22%

4 The probability scale shows four points, A, B, C and D. Match each event to a letter.



(a) A fair coin lands on tails

Answer: B

(b) Spinner lands on red

Answer: C

(c) A card from a pack is a spade

Answer: A

(d) The sun rises tomorrow morning

Answer: D

5 A fair six-sided die is rolled. Find the probability of each event. Give each answer as a fraction in its simplest form.

(a) rolling a 5

Answer: $\frac{1}{6}$

(b) rolling an even number

Answer: $\frac{1}{2}$

(c) rolling a number bigger than 4

Answer: $\frac{1}{3}$

(d) rolling a multiple of 3

Answer: $\frac{1}{3}$

(e) rolling a number less than 7

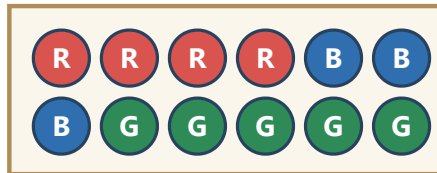
Answer: 1

(f) rolling a 7

Answer: 0

6 The diagram shows the counters in a bag. One counter is picked at random. Find the probability that it is...

Counters in the bag



(a) red

Answer: $\frac{1}{3}$

(b) blue

Answer: $\frac{1}{4}$

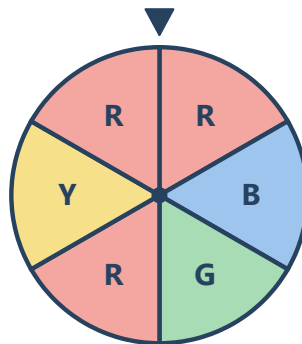
(c) green

Answer: $\frac{5}{12}$

(d) red or blue

Answer: $\frac{7}{12}$

7 The spinner has 6 equal sections. Find the probability that it lands on... (R = red, B = blue, G = green, Y = yellow)



(a) red

Answer: $\frac{1}{2}$

(b) blue

Answer: $\frac{1}{6}$

(c) green or yellow

Answer: $\frac{1}{3}$

8 A bag has 10 counters. 3 are red and 7 are blue. One counter is picked at random. Write down P(red) as a fraction and as a decimal.

Answer: 3/10, 0.3

9 A letter is chosen at random from the word MATHEMATICS. Find the probability that the letter is...

(a) M

Answer: $\frac{2}{11}$

(b) a vowel (A, E, I, O or U)

Answer: $\frac{4}{11}$

(c) T or C

Answer: $\frac{3}{11}$

(d) Z

Answer: 0

10 A card is taken at random from a standard pack of 52 playing cards. Find the probability that it is...

(a) a heart

Answer: $\frac{1}{4}$

(b) a king

Answer: $\frac{1}{13}$

(c) a red queen

Answer: $\frac{1}{26}$

(d) a picture card (jack, queen or king)

Answer: $\frac{3}{13}$

(e) the ace of spades

Answer: $\frac{1}{52}$

11 A number is chosen at random from the whole numbers 1 to 20. Find the probability that the number is...

(a) a multiple of 5

Answer: $\frac{1}{5}$

(b) a square number

Answer: $\frac{1}{5}$

(c) a factor of 20

Answer: $\frac{3}{10}$

(d) a prime number

Answer: $\frac{2}{5}$

12 A raffle sells 250 tickets and one ticket is drawn as the winner. Sam bought 10 tickets and Tia bought 15 tickets. Find the probability that...

(a) Sam wins

Answer: $\frac{1}{25}$

(b) Tia wins

Answer: $\frac{3}{50}$

(c) Sam or Tia wins

Answer: $\frac{1}{10}$

13 Here are four events. A: a fair coin lands on heads. B: a fair die lands on 6. C: a fair die lands on a number less than 5. D: a letter chosen at random from the 12 months is the first letter J (January, June, July). Write A, B, C and D in order, starting with the **least** likely.

Answer: B, D, A, C

14 Ben says: "The probability that it rains tomorrow is $\frac{1}{2}$ because it either rains or it does not." Explain why Ben is wrong.

Answer: The two outcomes are not equally likely

15 Zara says: "The probability of rolling a 6 is $\frac{1}{6}$, so if I roll a die 6 times I must get exactly one 6." Is Zara correct? Give a reason.

Answer: No

16 Jack says: "A bag has 3 red counters and 1 blue counter. There are two colours, so the probability of blue is $\frac{1}{2}$." Explain Jack's mistake and write the correct probability.

Answer: $\frac{1}{4}$

17 A fair spinner has 12 equal sections. 3 sections are red, 4 sections are blue and the rest are green. Work out...

(a) Number of green sections

Answer: 5

(b) P(green)

Answer: $\frac{5}{12}$

- 18** A bag contains only red counters and blue counters. There are 3 red counters. The probability of picking a red counter is $\frac{1}{5}$. How many blue counters are in the bag?

Answer: 12

- 19** Explain why the number 1.2 cannot be the probability of an event.

Answer: It is bigger than 1