Name:

Exam Style Questions

Probability

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

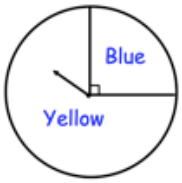
1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 244
Video 245
Video 250
Video 251

1. The diagram shows a fair spinner.



(a) Which colour is the arrow most likely to land on?

yellow

(1)

(b) Mark the scale with an arrow to show the probability of landing on green.

(1)

2.

Impossible	Unlikely	Even	Likely	Certain

Which word from the box best describes the likelihood of each of these events?

(a) A new-born baby is a girl.

Even

(1)

(b) You thrown an ordinary dice and get a two.

unlikely

(1)

3.

Impossible	Unlikely	Evens	Likely	Certain

Use a word from the box which best describes the probability of each of the following events

(a) You roll a 10 on an ordinary six sided dice.

impossible

(1)

(b) You roll a number greater than 1 on an ordinary six sided dice.

likely

(1)

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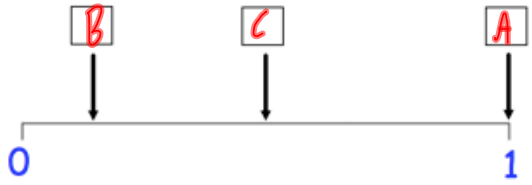
4. A fair six-sided dice is thrown.

The probabilities of the following events have been marked on the probability scale below.

A: A number less than 7 is thrown.

B: A "6" is thrown.

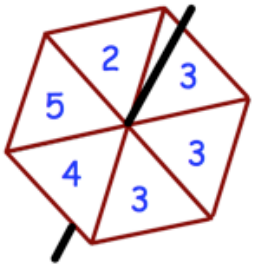
C: An odd number is thrown.



Place the events A, B and C in the correct boxes.

(3)

5. Amir makes a fair spinner with six sectors.



Impossible	Unlikely	Evens	Likely	Certain

Use a word from the box which best describes the probability of each of the following events

(a) The spinner will land on 6

impossible
.....
(1)

(b) The spinner will land on 3

evens
.....
(1)

(c) The spinner will land on 2

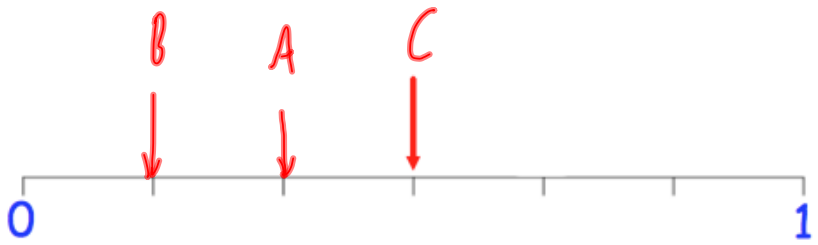
unlikely
.....
(1)

(d) The spinner will land on a number greater than 1

certain
.....
(1)

6. A fair six sided dice is rolled.
The probability of one of the following events is marked with an arrow on the scale below.

A The dice lands showing a number less than three.
B The dice lands showing the number three.
C The dice lands showing an even number



(a) Label the arrow to show which event it represents.

(1)

(b) Mark and label the scale to show the probabilities of the other two events.

(2)

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7. The following cards are placed in a box.

A card is selected at random.

Find the probability that the number on the card is

(a) 3

$\frac{1}{6}$

.....

(1)

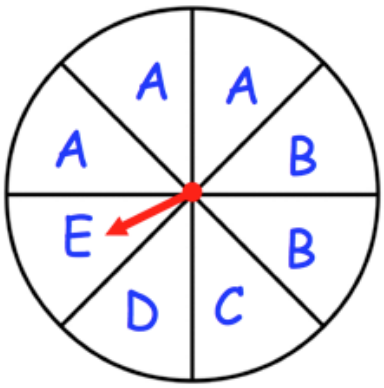
(b) an odd number

$\frac{3}{6} = \frac{1}{2}$

.....

(1)

8. A fair spinner has eight equal sections.
The sections are labelled A, B, C, D and E as shown below.



The arrow is spun.

(a) Which is the most likely letter that the arrow will land on?

A

.....

(1)

(b) What is the probability that the arrow lands on a B?

$\frac{2}{8} = \frac{1}{4}$

.....

(1)

(c) What is the probability that the arrow lands on an A?

$\frac{3}{8}$

.....

(1)

9. Thomas has 12 cards, each with a letter on it.

C	o	r	b	e	t	t	m	a	t	h	s

He picks a card at random.

Write down the probability that the chosen card is

(a) the letter h

$\frac{1}{12}$

.....

(1)

(b) the letter t

$\frac{3}{12} = \frac{1}{4}$

.....

(1)

(c) **not** the letter e

$\frac{11}{12}$

.....

(2)

(d) the letter b **or** the letter t

$\frac{4}{12} = \frac{1}{3}$

.....

(2)

(e) a vowel

a o e i u

$\frac{3}{12} = \frac{1}{4}$

.....

(2)

10. A bag contains 10 discs.
Each disc is labelled with a different number from 1 to 10.
A disc is chosen from the bag at random.

Write down the probability that the chosen disc is

(a) the number 3

$\frac{1}{10}$

.....

(1)

(b) a number less than four

$\frac{3}{10}$

.....

(2)

(c) a square number

1 4 9

$\frac{3}{10}$

.....

(2)

(d) a prime number

2 3 5 7

$\frac{4}{10} = \frac{2}{5}$

.....

(2)

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11. Liam rolls an ordinary fair six sided dice.
Write down the probability that he gets

(a) the number 4

$\frac{1}{6}$

.....

(1)

(b) a number less than 5

$\frac{4}{6} = \frac{2}{3}$

.....

(2)

12. Sean has a box of pens.
The box contains 6 blue pens, 8 black pens and 3 red pens.

(a) What is the probability that he will pick a blue pen?

$\frac{6}{17}$

$\frac{6}{17}$

.....

(1)

(b) What is the probability that he will pick a green pen?

0

.....

(1)

Some more blue pens are added to the box.
The probability of selecting a blue pen is now ½

(c) How many blue pens were added to the box?

11 black and red pens.

11 blue needed.

$6 + 5 = 11$

5

.....

(2)

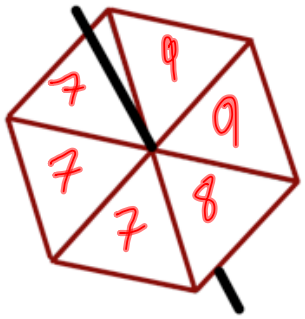
13. Tony makes a fair six-sided spinner.
The spinner has the numbers 7, 8 and 9 on it.

The probability the spinner will land on 7 is greater than the probability that the spinner will land on 8.

The probability that the spinner will land on 9 is ⅓

Write the numbers on the spinner.

$\frac{1}{3}$ of 6 = 2



(2)

14. Elizabeth has a bunch of red, yellow and white roses.
She chooses a rose at random.

The probability that she chooses a yellow rose is 0.1
The probability that she chooses a white rose is 0.2

(a) What is the probability that Elizabeth chooses a rose that is either yellow or white?

$0.1 + 0.2 = 0.3$

0.3

(1)

(b) What is the probability that Elizabeth chooses a red rose?

$1 - 0.3 = 0.7$

0.7

(2)

(c) There were ten roses in the bunch originally.
How many roses were red?

$10 \times 0.7 = 7$

7

(2)

15. Mia has five numbered cards.

One of these cards is chosen at random.
Mia says:

The probability of an odd number is $\frac{3}{5}$ 3 cards
The probability of a 7 is $\frac{2}{5}$ 2 cards
The range of the numbers is 10
The probability of a 2 is 0.

Fill in three numbers that could be on Mia's cards.

4, 7, 14

(3)

16. Counters labelled A, B, C, D and E are placed in a bag.
The table shows the probabilities of picking each letter at random.

Letter	A	B	C	D	E
Probability	0.07	0.15	0.26	0.34	0.18

(a) Calculate the missing probability in the table.

0.07 + 0.15 + 0.26 + 0.18 = 0.66

1 − 0.66

0.34

(2)

(b) Calculate the probability of a B or C.

0.15 + 0.26 =

0.41

(2)

17. A bag contains 400 coloured counters.
The counters are either yellow, brown or green.
There are 92 yellow counters in the bag.
The probability that a brown counter is chosen from the bag is 0.13

Calculate the number of green counters in the bag.

400 x 0.13 = 52 brown

52 + 92 = 144 brown and yellow

400 - 144 =

256

(4)

18. Each boy at a school plays one of four sports.

The table shows the probability a student chosen at random plays rugby, football, hockey or cricket.

Sport	Rugby	Football	Hockey	Cricket
Probability	0.4	0.2	0.1	

A student is chosen at random.

(a) Work out the probability that the student plays cricket.

0.4 + 0.2 + 0.1 = 0.7

1 - 0.7

0.3

(2)

There are 600 boys at the school

(b) Work out the number of boys who play rugby.

600 x 0.4

240

(2)

19. A game is played with a five sided spinner.
Each section is a different colour.
The spinner is biased.
The table shows some of the probability of the spinner landing on each colour.

Colour	Red	Blue	Green	Pink	Black
Probability	0.34	0.1	0.22	0.22	0.12

The probability of green is equal to the probability of pink.

Calculate the probability the spinner lands on pink.

$0.34 + 0.1 + 0.12 = 0.56$

$1 - 0.56 = 0.44$

$0.44 \div 2$

0.22

(3)

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20. Dennis has a bag of counters.
The counters are red, green, white and pink.
There are 200 counters in the bag.
The probability of a pink counter is 0.15
The probability of a green counter is 0.25
The probability of a red counter is twice the probability of a white counter.

red 2 : 1 white

Calculate the number of red counters in the bag.

$200 \times 0.15 = 30$ pink

$200 \times 0.25 = 50$ green

80 pink & green

$200 - 80 = 120$

$120 \div 3 = 40$

$40 \times 2 = 80$ red

80 red

(4)

21. A rugby team can win, draw or lose a match.
The table shows the probabilities of each result.

Result	Win	Draw	Lose
Probability	0.4	0.35	0.25

(a) Calculate the missing probability in the table.

$0.4 + 0.35 = 0.75$

$1 - 0.75 = 0.25$

0.25

(2)

Each win is worth 2 points.
Each draw is worth 1 point.
Each loss is worth 0 points.
The rugby team plays 20 games in a season.

(b) Work out how many points the rugby team should receive in one season.

$20 \times 0.4 = 8$ wins

$20 \times 0.35 = 7$ draws

$8 \times 2 = 16$

$7 \times 1 = 7$

$16 + 7 = 23$

23 points

(3)

22. Susan has some beads in a bag.

5 of the beads are orange.
3 of the beads are purple.
The rest of the beads are pink.

Susan takes a bead from the bag at random.

The probability that she takes a pink bead is $\frac{3}{5}$

How many pink beads are in the bag before Susan takes a bead?

8 orange/purple. = $\frac{2}{5}$ of the beads

4 = $\frac{1}{5}$ of the beads

12 = $\frac{3}{5}$ of the beads 12

.....

(2)

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23. The probability of James winning a competition is 0.03

What is the probability that James does not win the competition.

0.97

.....

(1)

24. Mrs Jenkins is organising a charity raffle.

She sells 300 tickets for £3 each.
The probability that someone wins a prize is 0.2
Each prize cost £8
The profit is donated to charity.

Work out how much money Mrs Jenkins donates to charity.

300 x 3 = £900

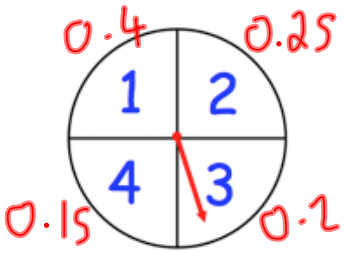
300 x 0.2 = 60
60 x 8 = 480

900 - 480 = £420

£ 420

(4)

25. Below is a biased four-sided spinner.



The probability of landing on a 2 is 0.25
The probability of landing on a 4 is 0.15
The probability of landing on a 1 is double the probability of a 3.

The spinner is spun 500 times.

Calculate the number of times you would expect it to land on 3

$500 \times 0.2 = 100$

100

(4)