Find probabilities from a sample space

1 Ron has to take part in two events on Sports Day.

He will be given a random field event and a random track event.

Field events	Track events
shot put	100 m
javelin	200 m
discus	hurdles
long jump	1,500 m

a) Complete the sample space diagram for the possible combinations of events.

	Shot put	Javelin	Discus	Long jump
100 m	(S, 100)	(J, 100)		
200 m				
Hurdles				
1,500 m				

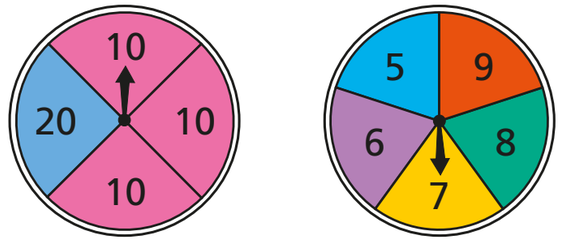
b) Ron enjoys the shot put and hurdles events.

Work out the probability Ron will be given both these events.

c) Ron does not like the long jump or 1,500 m.

What is the probability that he gets exactly one event that he does not like?

2 The two spinners are spun and the totals are added together.



Filip and Dani both draw sample space diagrams.

Filip

		Spinner 2				
		5	**6**	**7**	**8**	**9**
Spinner 1	**10**					
	20					

Dani

		Spinner 2				
		5	**6**	**7**	**8**	**9**
Spinner 1	**10**					
	10					
	10					
	20					

a) What is wrong with Filip's diagram?

b) Complete Dani's sample space diagram.

c) What does P(17) mean?

d) Fill in the missing information.

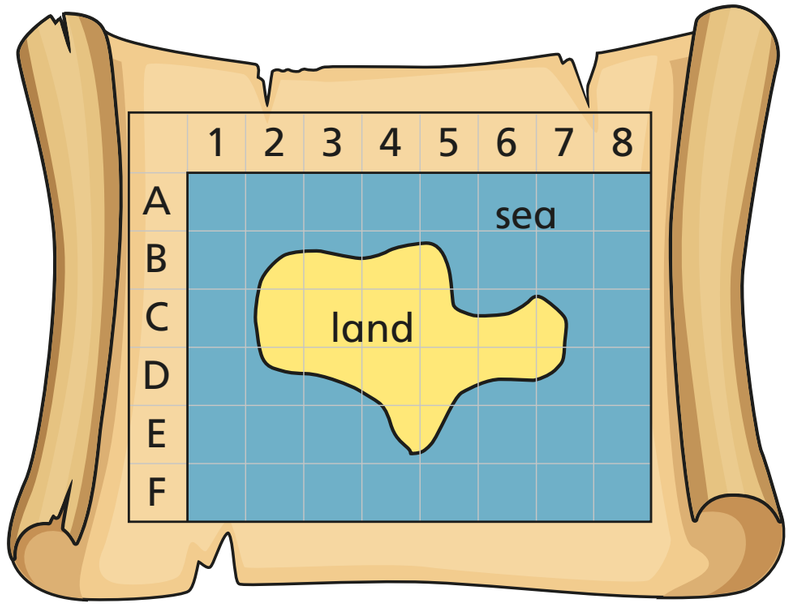
P(17) = ☐ P(square number) = ☐

e) Work out P(number less than 20).

Give your answer as a simplified fraction.

Discuss why you should expect this probability.

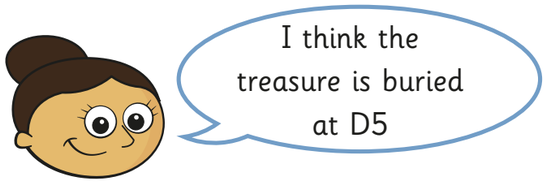
3 The map shows Pirate Island.



Treasure is buried in one of the grid squares.

It could be buried at sea or on land.

a) How many different possibilities are there for the location of the treasure?



b) What is the probability that Dora is correct?

Dora is told that the treasure was definitely buried in a grid square that contains land.

c) What is the probability that Dora has been given the correct information?

4 Huan randomly selects one of the first numbers, an operation and one of the second numbers.

first number	operation	second number
1, 3	+, −	2, 4

a) Explain why there are 8 possible calculations.

b) List the possible calculations and their value.

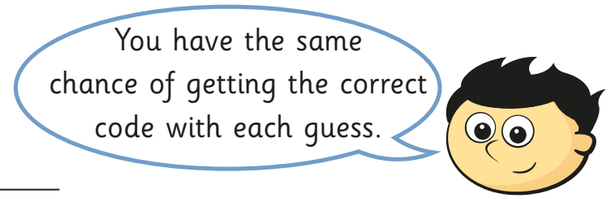
c) Work out P(value of calculation is negative).

5 A lock uses a 2-digit security code.

a) What is the probability that you get the correct code on your first guess?

Give your answer as a percentage.

You have three guesses before the lock's alarm goes off.



b) Is Jack correct? _____

Explain your answer.