

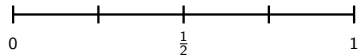
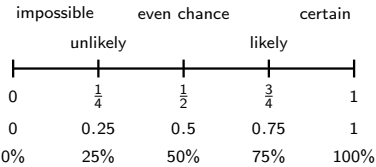
Probability: Starters

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Starter



- A a fair coin lands on heads
- B a day chosen at random is a Saturday
- C an ordinary dice is rolled and shows a number less than 7
- D a counter taken from a bag of 3 red and 1 blue counters is red

1. Write 0.25 as a fraction in its simplest form.

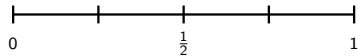
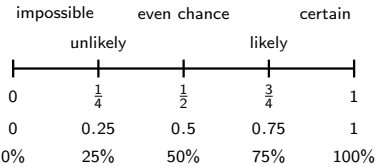
2. Write $\frac{3}{5}$ as a decimal and as a percentage.
3. Every probability is a number from ___ to ___.

4. Mark events **A**, **B**, **C** and **D** on the empty scale.
5. Complete the table.

Description	Probability
impossible	0
unlikely	between 0 and ___
even chance	between ___ and 1
likely	between ___ and 1
certain	1
6. Write a probability that is unlikely but not impossible, as a fraction, a decimal and a percentage.

7. Ravi says “the probability that it rains tomorrow is 1.4”. Explain why he is wrong.

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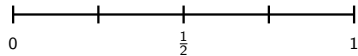
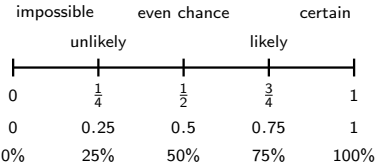
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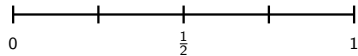
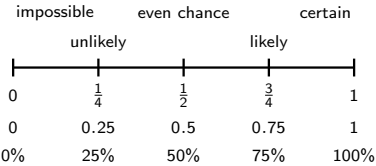
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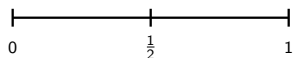
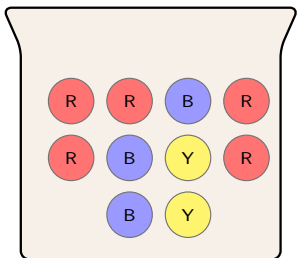
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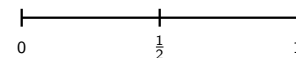
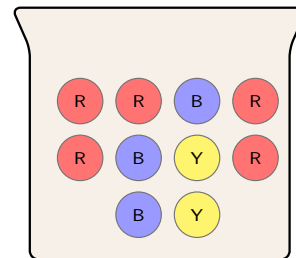
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One counter is taken from the bag at random. The probability that the counter is red is written $P(\text{red})$.

- Write $\frac{1}{2}$ as a decimal and as a percentage.
- Write 30% as a fraction in its simplest form.
- How many counters are in the bag altogether?
- Write $P(\text{red})$ as a fraction in its simplest form.
- Write $P(\text{blue})$ as a fraction, a decimal and a percentage.
- Mark $P(\text{red})$, $P(\text{blue})$ and $P(\text{yellow})$ on the probability scale.
- Write $P(\text{not red})$ as a fraction in its simplest form.
- What does $P(\text{red}) + P(\text{blue}) + P(\text{yellow})$ come to, and why?
- Only red counters are added to the bag, until $P(\text{red})$ is $\frac{3}{4}$. How many red counters are added?

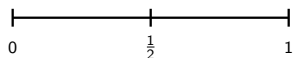
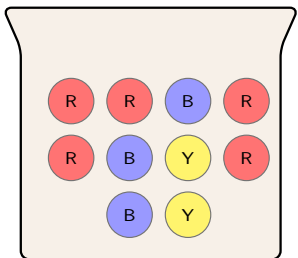
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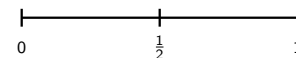
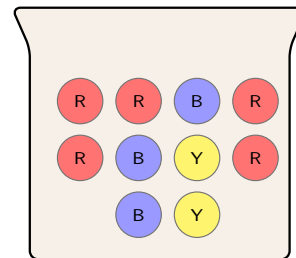
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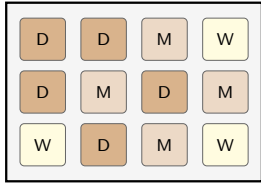
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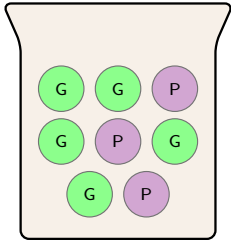
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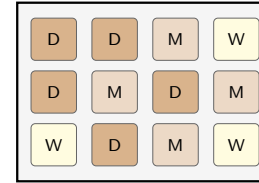
a box of dark, milk and white chocolates



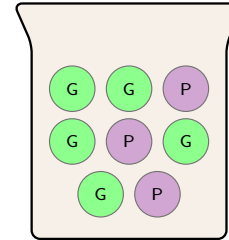
a bag of green and purple counters

- Write $\frac{3}{4}$ as a decimal and as a percentage.
- Write 0.08 as a percentage and as a fraction in its simplest form.
- One chocolate is taken at random. Write $P(\text{white})$ in its simplest form.
- Write $P(\text{not milk})$ in its simplest form.
- Write $P(\text{green})$ for the bag as a fraction, a decimal and a percentage.
- Which is more likely: a dark chocolate, or a purple counter? Show your working.
- A counter is taken from the bag at random and then replaced. This is done 200 times. How many green counters would you expect?
- Another bag holds only red and blue counters. It holds 12 red counters, and $P(\text{red}) = 0.4$. How many counters are in it?

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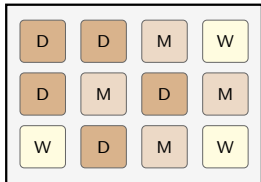
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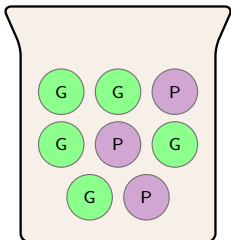
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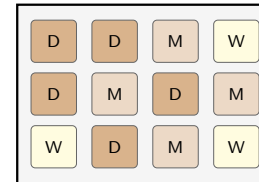
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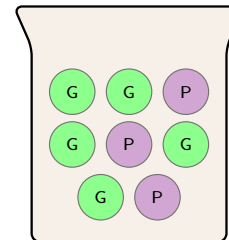
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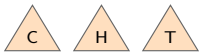


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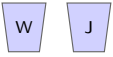
Starter

Choose a sandwich



C cheese H ham T tuna

and a drink



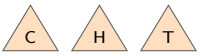
W water J juice

	W	J
C		
H		
T		

- Write $\frac{2}{5}$ as a decimal and as a percentage.
- Write 65% as a fraction in its simplest form.
- A spinner lands on red, blue or green only. $P(\text{red}) = 0.35$, $P(\text{blue}) = 0.4$. Write $P(\text{green})$.
- Complete the table to list every lunch deal.
- How many different lunch deals are there?
- A deal is chosen at random. Write $P(\text{juice})$ in its simplest form.
- Write $P(\text{cheese with water})$.
- A third drink is added. How many deals are there now?
- Two fair coins are flipped. List all the outcomes systematically, then write $P(\text{one head and one tail})$.

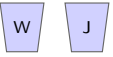
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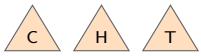
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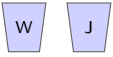
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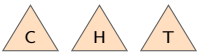
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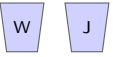
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Two fair, ordinary dice are rolled, and the two numbers on them are added together.

		second dice					
first dice	+	1	2	3	4	5	6
	1	2	3	4	5	6	
	2	3	4	5	6	7	
	3	4	5	6	7	8	
	4	5	6	7	8	9	
	5	6	7	8	9	10	
	6						
the sum of the two dice							

- Write $\frac{1}{3}$ as a decimal and as a percentage.
- Write 0.36 as a fraction in its simplest form.
- Write the missing sums in the table.
- How many outcomes are there altogether?
- Write P (the sum is 7) in its simplest form.
- Write the probability that the sum is more than 10, in its simplest form.
- Which sum is the most likely? Use its probability as a percentage to decide whether that sum is likely or unlikely.
- The two dice are rolled 180 times. How many times would you expect a sum of 5?

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	2	3	4	5	6	7	
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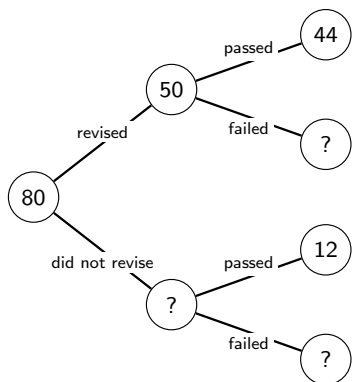
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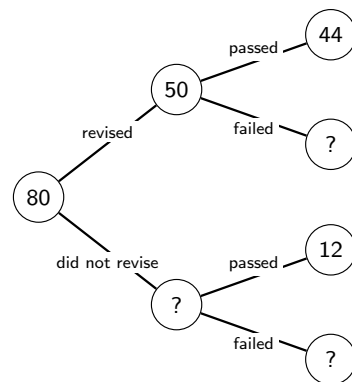
80 pupils sat a test. 50 of them revised. Of the pupils who revised, 44 passed. Of the pupils who did not revise, 12 passed. One of the 80 pupils is then chosen at random.



- Write $\frac{3}{8}$ as a decimal and as a percentage.
- A bag holds 9 red and 1 blue counter. Is taking a red counter likely? Give $P(\text{red})$ as a percentage.
- Complete the frequency tree.
- How many pupils passed the test altogether?
- Write $P(\text{revised})$ in its simplest form.
- Write $P(\text{revised and failed})$ in its simplest form.
- Write $P(\text{passed})$ as a fraction, a decimal and a percentage.
- Is a pupil who revised more likely to pass than a pupil who did not revise? Use probabilities to explain your answer.

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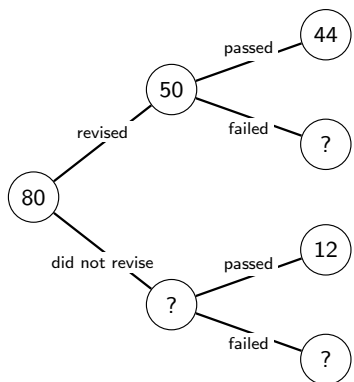
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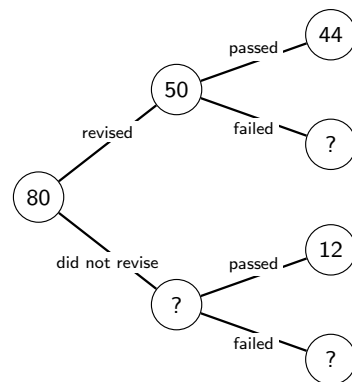
80 pupils sat a test. 50 of them revised. Of the pupils who revised, 44 passed. Of the pupils who did not revise, 12 passed. One of the 80 pupils is then chosen at random.



- Write $\frac{3}{8}$ as a decimal and as a percentage.
- A bag holds 9 red and 1 blue counter. Is taking a red counter likely? Give $P(\text{red})$ as a percentage.
- Complete the frequency tree.
- How many pupils passed the test altogether?
- Write $P(\text{revised})$ in its simplest form.
- Write $P(\text{revised and failed})$ in its simplest form.
- Write $P(\text{passed})$ as a fraction, a decimal and a percentage.
- Is a pupil who revised more likely to pass than a pupil who did not revise? Use probabilities to explain your answer.

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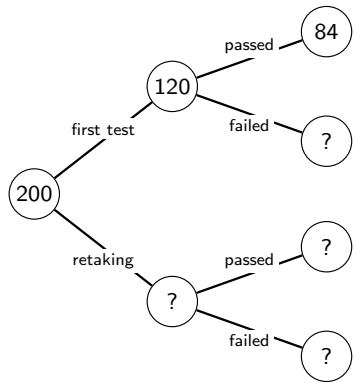
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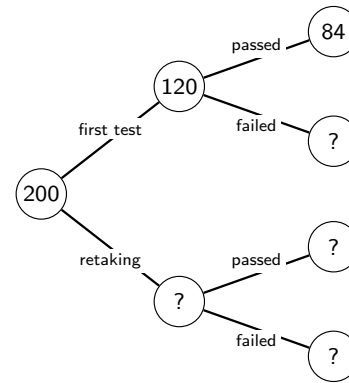
200 people took a driving test. 120 of them were taking it for the first time, and 84 of those passed. Altogether 130 people passed.



- Write 0.65 as a fraction in its simplest form.
- Write $\frac{7}{8}$ as a percentage.
- A bag holds 7 green and 3 red counters. Write $P(\text{green})$ as a percentage.
- Complete the frequency tree.
- Write $P(\text{passed})$ in its simplest form and as a percentage.
- Write the probability that a person took the test for the first time and passed.
- What percentage passed on a first test, and what percentage passed on a retake?
- Jo says "people are more likely to pass a retake, because they have had more practice". Do these figures support Jo?

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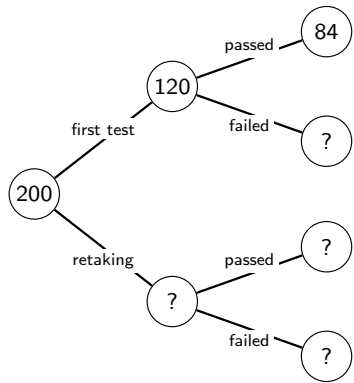
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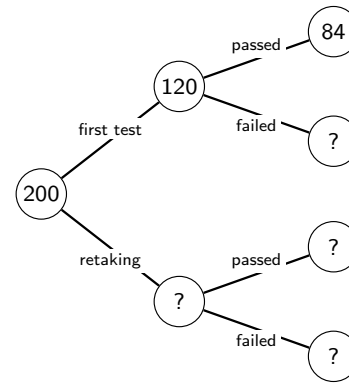
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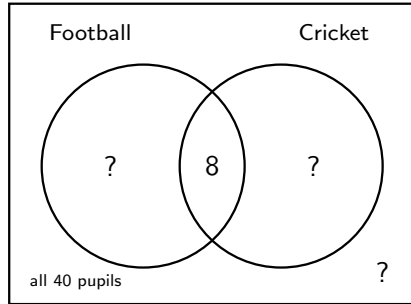
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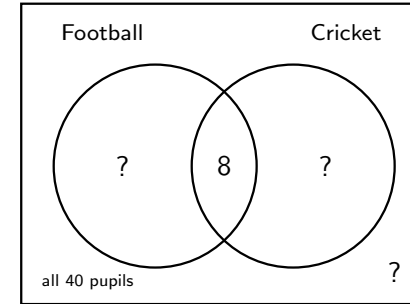
40 pupils were asked which sports they play. 24 play football, 16 play cricket, and 8 play both. One pupil is then chosen at random.



1. Write 0.2 as a fraction in its simplest form and as a percentage.
2. A café sells 4 sandwiches and 3 drinks. How many deals of one sandwich and one drink are there?
3. How many pupils play football but not cricket?
4. Complete the Venn diagram.
5. Write $P(\text{cricket})$ in its simplest form and as a percentage.
6. Write $P(\text{neither sport})$ in its simplest form.
7. Write $P(\text{football or cricket})$ in its simplest form and as a percentage.
8. $P(\text{football}) + P(\text{cricket}) = \frac{3}{5} + \frac{2}{5} = 1$, but $P(\text{football or cricket}) = \frac{4}{5}$. Explain why these are different.

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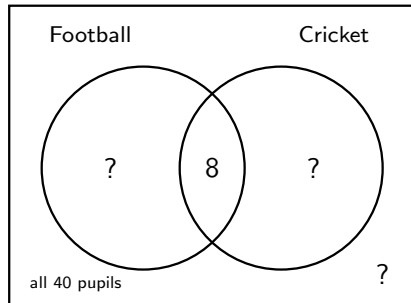
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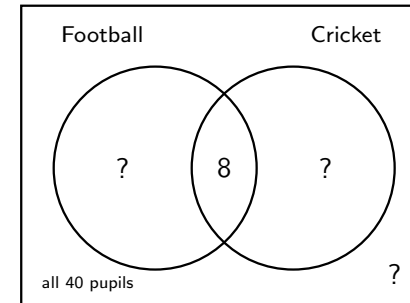
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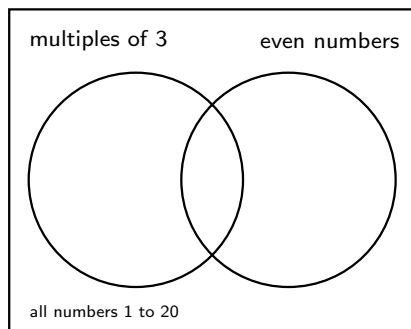
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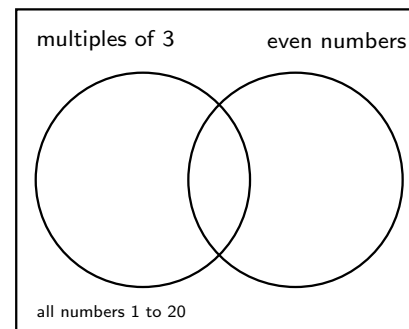
One of the numbers from 1 to 20 is chosen at random.



1. Write $\frac{3}{20}$ as a decimal and as a percentage.
2. Write 35% as a fraction in its simplest form.
3. Write each number from 1 to 20 in the correct region.
4. A number goes in the overlap when it is a multiple of ____.
5. Write $P(\text{multiple of 3})$ in its simplest form.
6. Write the probability that the number is neither even nor a multiple of 3.
7. Is the number likely or unlikely to be a multiple of 3? Use its probability as a percentage to explain.
8. Choose two new labels for the circles so that the overlap must be empty, and explain why.

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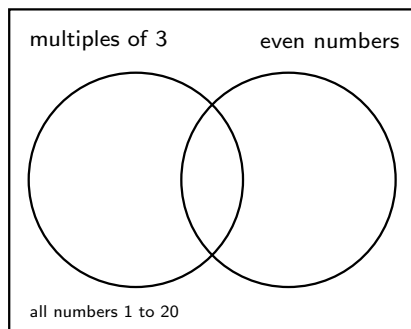
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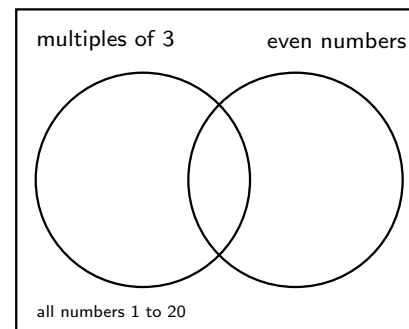
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