



Core Maths Maths in Context

Transition Work

The transition work for Core Maths—Maths in Context is in two parts:

The first part is to complete an online course on some of the pre—requisite skills—the link for you to register on this course is on the next page.

The second part is to do the questions in this booklet.

Students who are new to studying Core Maths may find it helpful to revise the skills they'll need to use in their studies. The same goes for students who are starting a non-maths A level subject with some mathematical content, such as

Biology, Psychology, Geography or Business, and/or a level 3 vocational course.

Content

These are the topics that are covered in the course:

The course includes full solutions to all questions and automatically marked online tests.

- Estimation and accuracy
- Interpreting graphs and charts (statistics for life)
- Measures and standard form
- Percentages 1
- Percentages 2
- Probability
- Proportional reasoning
- Data tables, averages and spread.

To access the online course you will need to follow this link https://my.integralmaths.org/integral/management/self_reg_students.php

You need to go onto the Core Maths Skills part.

Once you have completed the course have a go at some of the following questions



Estimation

Skills checks

Skills check 1

If the average height of a woman in the UK is 160 cm, estimate the average height of a man in the UK in metres

- a) 180 m
- b) 18 m
- c) 1.8 m
- d) 2.4 m

Or other?

Skills check 2

The average expenditure of a student on groceries per week is £33.25. Which of the calculations below would give the estimated average spend for a month for a household of five students?

- a) $33.25 \times 4 \times 5$
- b) $33.25 \div 4 \times 5$
- c) $30 \times 4 \times 5$
- d) $30 \div 4 \times 5$

Or other?

Skills check 3

In April 2024, the population of England was 56.98 million, to 2 decimal places. What were the lower and upper limits for the population of England in April 2024?

- a) 56 900 000 and 57 000 000
- b) 56 975 000 and 56 985 000
- c) 56 950 000 and 57 050 000
- d) 56 000 000 and 57 000 000

Or other?

Skills check 4

In 2022 Domino's sold 114 million pizzas to the nearest million. In 2023 they sold 112 million pizzas to the nearest million. You need 265 g of bread flour to make one Domino's pizza. Which of these answers could be a reasonable estimate of how much more bread flour was used in 2022 compared to 2023, in metric tonnes?

- a) 600
- b) 500
- c) 530 000
- d) 600 000

Or other?

Activities

Activity 1: Going to a festival

Sonia wants to go to Reading Festival with her partner Alex.

They both live in Bristol, and want to go to the full festival, including the early entry. This is 5 days in total.

She already has a tent and equipment for the weekend, and they have a Two Together railcard to use on the train.

She needs to estimate how much it will cost them to go to the festival to decide if they can afford it.

- Write down how much you think a ticket (including early entry) to Reading Festival costs.
- Discuss with the person next to you: what other costs do you think Sonia and Alex will need to budget for over the festival?
- Estimate how much money in total you think Sonia will need for her share of the costs.

Sonia does some research and records her expected costs in a table:

	Cost for one person alone	Cost for two people together
Festival ticket	£361.00	
Taxi to Bristol Temple Meads		£14.50
Advanced return train ticket	£45	£60.00
Flexible return train ticket	£79.20	
Weekend bus ticket	£6.50	
Food and drink budget per day	£25	£50

For each remaining empty cell:

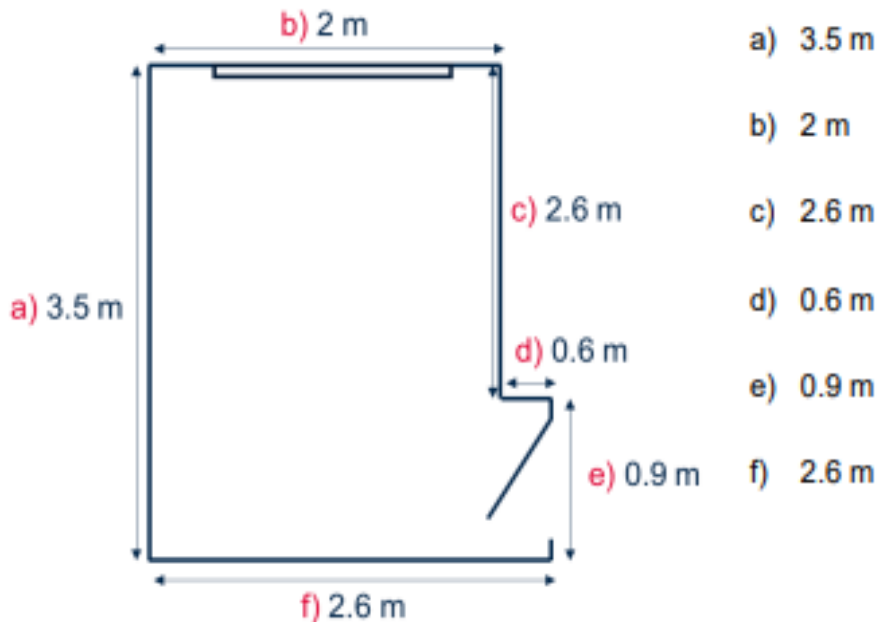
- Estimate the cost
- Calculate the exact cost

Activity 2: Redecorating a room

Below is the plan of Charlie's room. The walls length and height (2.3 m) have been measured to the nearest 0.1 m.

What is the upper and lower limit of the height of the walls?

What are the upper and lower limits for the length of each wall?



Charlie wants to repaint his room and needs to apply two coats of paint. He won't paint the window or the bedroom door. The window has an area of 2.5 m^2 and the door has an area of 1.5 m^2 . These have been calculated to 1 decimal place.

One 5 litre can of paint can cover an area of 33 square metres.

One 1 litre can of paint can cover an area of 6.6 square metres.

Using your answers to the previous question, calculate the following:

a) The minimum and maximum surface area of walls to be painted

b) The smallest amount of paint, in cans, needed to repaint the room

c) The largest amount of paint, in cans, needed to repaint the room

Activity 3: E-scooters

In July 2020, rental e-scooter trials were launched in 32 areas across England, with an objective to inform decisions as to whether and how to legalise e-scooter use in the future.

From July 2020 to the end of December 2021, 14.5 million rental e-scooter trips were made.

Roughly how many trips were made on average:

a) Per month

b) Per day

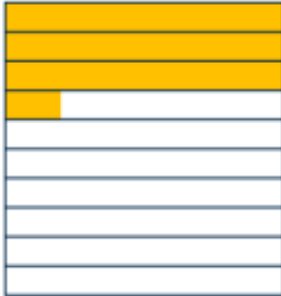
c) Per hour

Percentages

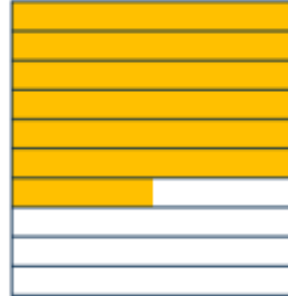
Skills check 1

Which square has 68% of its area shaded? There are 10 rows in each square.

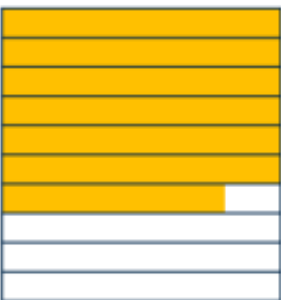
a)



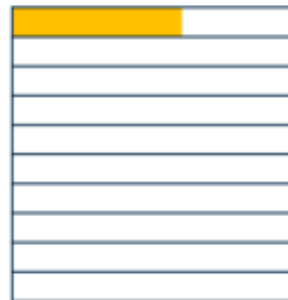
c)



b)



d)



Or other?

Skills check 2

The population of the UK is around 67 million. It is estimated that 28.8 million people in the UK have blue eyes. Calculate the percentage of people in the UK that do **not** have blue eyes.

a) 232%

c) 43%

b) 0.43

d) 57%

Or other?

Skills check 3

A flat bought for £40 000 in 1992 is valued at £85 000 in 2015. What percentage has the value of the flat increased by?

a) 47.1%

c) 112.5%

b) 212.5%

d) 12.5%

Or other?

Skills check 4

The cost of a smartphone was reduced in price by 15%. If the reduced price is £467.50, which calculation could be used to work out the original price?

- a) Original price = 467.5×1.15
- b) Original price = $467.5 \div 1.15$
- c) Original price = 467.5×0.85
- d) Original price = $467.5 \div 0.85$

Or other?

Skills check 5

The formula $C = P \times (1 + i)^n$ is used to calculate the amount of money in a bank account.

P is the amount of money originally put into the bank account.

n is the number of years you leave the money in the account.

i is the rate of interest as a decimal.

C is the amount of money you have in the account at the end of n years.

Which of the below would be used if interest rate was 4%?

- a) $C = P \times (1 + 4)^n$
- b) $C = P \times (1 + 0.04)^n$
- c) $C = P \times (1 + 0.4)^n$
- d) $C = P \times (1 + 0.004)^n$

Or other?

Activities

Activity 1: Employment statistics

From June 2022 to August 2022 the unemployment rate of those aged 16 and over in the UK was **3.6%**.

- a) Explain to the person next to you what the unemployment rate means.
- b) Write the unemployment rate as a decimal.
- c) Write the unemployment rate as a fraction.
- d) The whole bar represents those aged 16 and over in the UK. The shading represents those unemployed. Which is correct?



From June 2022 to August 2022 the unemployment rate of those aged 16 and over in the UK was 3.6%.

The population estimate for those aged 16 or over in the UK in 2022 was 55 190 347.

Which of the calculations could be used to work out the number of people aged 16 and over in the UK who were unemployed from June 2022 to August 2022?

a) $0.36 \times 55\,190\,347$

b) $0.036 \times 55\,190\,347$

c) $\frac{36}{100} \times 55\,190\,347$

d) $\frac{55\,190\,347}{100} \times 3.6$

e) $\frac{36}{1000} \times 55\,190\,347$

f) $\frac{3.6}{100} \times 55\,190\,347$

By choosing a correct and efficient calculation from the above, use your calculator to work out how many people aged 16 or over were unemployed from June 2022 to August 2022.

Notes