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## Second Level

## Experiences and Outcomes

I can explain how different methods can be used to find the perimeter and area of a simple $2 D$ shape or volume of a simple $3 D$ object. MNU 2-11c

Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with other. MNU 2-03a
I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability. MNU 2-22a

I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems. MNU 2-07a

I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems. MNU 2-07a

## Question

1. Draw 5 different rectangles each with an area of $24 \mathrm{~cm}^{2}$. Share your solution and strategy with others.
2. What is the probability of throwing:

- a six ?
- an even number?

Provide your answers in two different ways of your choice.


## Benchmarks

Calculates the area of 2D shapes in square millimetres ( $\mathrm{mm}^{2}$ ), square centimetres $\left(\mathrm{cm}^{2}\right)$ and square metres $\left(\mathrm{m}^{2}\right)$ and explains the choice of method used.

Draws shapes accurately with a given perimeter or area.

Uses knowledge of inverse operations in problem solving.
Uses the language of probability accurately to describe the likelihood of simple events occurring, for example, equal chance; fifty-fifty; one in two, two in three; percentage chance and 1:6.

Uses knowledge of equivalent forms of fractions, decimal fractions and percentages, for example, $\frac{3}{4}=0.75=75 \%$, to solve problems, justifying choice of method used.

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| I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems. <br> MNU 2-11b <br> I can manage money, compare costs from different retailers, and determine what I can afford to buy. <br> MNU 2-09a <br> I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. <br> MNU 2-03b | 3. A joiner needs to buy skirting boards to complete the decoration of a living room. What length of skirting does he need to buy and how much will it cost? <br> Please provide your answer in metres. <br> Skirting board £5.99 per metre Living room <br> E 10 N N <br> 2700mm | Calculates the perimeter of simple 2D shapes in millimetres ( mm ), centimetres (cm)and metres (m) and explains the choice of method used. <br> Converts between common units of measurement using decimal notation, for example, $550 \mathrm{~cm}=5.5 \mathrm{~m} ; 3.009 \mathrm{~kg}=3 \mathrm{~kg} 9 \mathrm{~g}$ and applies this knowledge when solving problems. <br> Recognises where decimal fractions are used in everyday life and applies this knowledge to record and convert amounts in money and measure accurately, for example, $501 \mathrm{p}=£ 5.01,9 \mathrm{~cm}$ $=0.09 \mathrm{~m}, 7 \mathrm{~g}=0.007 \mathrm{~kg}$ <br> Carries out money calculations involving the four operations. |
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I can use my knowledge of rounding to routinely estimate the answer to a problem then, after calculating, decide if my answer is reasonable, sharing my solution with others. MNU 2-01a

Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others. MNU 2-03a

I can manage money, compare costs from different retailers, and determine what I can afford to buy. MNU 2-09a

I can use and interpret electronic and paper-based timetables and schedules to plan events and activities, and make time calculations as part of my planning. MNU 2-10a

Using simple time periods, I can give a good estimate of how long a journey should take, based on my knowledge of the link between time, speed and distance.

## MNU 2-10c


are going on holiday to Edinburgh. The distance from their home in Aberdeen to Edinburgh is 120 miles. At an average speed of 60 miles per hour, the family car can travel 8 miles per litre of fuel. A litre of fuel costs $£ 1.10$. The family set off on their journey at 11.45 and travel at an average speed of 60 miles per hour. They have a 30 minute stop for refreshments

Give an estimate for the family's journey time and explain your thinking

What time do they actually arrive at their holiday destination? Please give your answer to the nearest 5 minutes in 24 hour notation.

How much fuel is used and what does it cost?

Please show all your calculations and share the process you used.

## Applies knowledge of rounding to give an estimate to a calculation appropriate to the context, and uses it to check the reasonableness of the solution.

## Shares solutions with others.

Interprets and solves multi-step problems by selecting and carrying out appropriate mental and written calculations, and sharing chosen approach with others.

Carries out money calculations involving the four operations.

## Knows the relationships between

 commonly used units of time and carries out simple conversion calculations, for example, changes $1 \frac{3}{4}$ hours into minutes.Calculates durations of activities and events, including situations bridging across several hours and parts of hours using both 12 hour clock and 24 hour notation.

Estimates the duration of a journey based on knowledge of the link between speed, distance and time.

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| I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems. MNU 2-07a | 5. In her dance exams Grace received the following marks : <br> Tap $\frac{50}{80} \quad$ Ballet $\frac{36}{40}$ <br> Modern $\frac{16}{20} \quad$ Jazz $\frac{19}{25}$ <br> Put Grace's results in order starting with her best result. | Uses knowledge of equivalent forms of fractions, decimal fractions and percentages, for example, $\frac{3}{4}=0.75=75 \%$, to solve problems, justifying choice of method used. |
| :---: | :---: | :---: |
| I can use and interpret electronic and paper-based timetables and schedules to plan events and activities, and make time calculations as part of my planning. <br> MNU 2-10a <br> I can manage money, compare costs from different retailers, and determine what I can afford to buy. <br> MNU 2-09a | 6. Dental Appointment <br> Mrs Smith lives in Toward on the Clyde coast. It takes her 10 minutes to drive from Toward to the Dunoon ferry terminal. <br> Mrs Smith has a dental appointment at 10.40am in Glasgow. Her dentist is a 15 minute walk from Central Station in Glasgow. What is the latest she can leave her home to make sure she arrives in time for her appointment? How long in total is her journey to Glasgow? <br> Use the link below to calculate the cost of her return journey to Glasgow, assuming she goes straight home. (The cheap day return applies to any journey which leaves Dunoon after 9.30am.) http://www.argyllferries.co.uk/ <br> Explain your answers and show working. | Uses and interprets a range of electronic and paper-based timetables and calendars to plan events or activities and solve real life problems. <br> Calculates durations of activities and events, including situations bridging across several hours and parts of hours using both 12 hour clock and 24 hour notation. <br> Carries out money calculations involving the four operations. |

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## Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others.

MNU 2-03a
I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems.

## MNU 2-07a

7. Two students are renting a flat for two years while they complete their college course.

The monthly rent for the flat is $£ 450$ with additional costs for :

- Gas £30 per month
- Electricity £24 per month
- Phone and internet $£ 100$ per quarter (4 times per year)

After the first year the landlord increases the rent by $15 \%$. All other costs remain the same.
How much will each girl have paid at the end of the two year period?

Interprets and solves multi-step problems by selecting and carrying out appropriate mental and written calculations, and sharing chosen approach with others.

Calculates simple percentages of a quantity, with and without a calculator, and uses this knowledge to solve problems in everyday contexts, for example, calculates the sale price of an item with a discount of $15 \%$.

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| Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading. <br> MNU 2-20a | 10. <br> Compare the two graphs <br> Look closely at the two graphs. What do they communicate? <br> What can you say about the reliability of each one? Give reasons for your decisions. | Analyses, interprets and draws conclusions from a variety of data and communicates findings effectively. <br> Draws conclusions about the reliability of data taking into account, for example, the author, the audience, the scale and sample size used. |
| :---: | :---: | :---: |

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I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way.

MNU 2-20b
I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.

MNU 2-11b
I can show the equivalent forms of simple fractions, decimal fractions and percentages and can choose my preferred form when solving a problem, explaining my choice of method.

MNU 2-07b
11. The Eco Committee has decided to monitor weather patterns over the next month. They want to include daily measurements on:

- Rainfall
- Temperature
- Cloud cover (average \% cover)

Collect, organise and present the data using and justifying methods of your choice. Share your findings and any conclusions with the class in the form of a short report.

Devises ways of collecting data in the most suitable way for the given task.

Collects, organises and displays data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, bar graphs, line graphs, frequency tables, pie charts and spread sheets.

Analyses, interprets and draws conclusions from a variety of data and communicates findings effectively.

Chooses the most appropriate measuring device for a given task, reading scales accurately, carrying out the required calculation and recording results in the correct unit.
Uses knowledge of equivalent forms of fractions, decimal fractions and percentages, for example, $\frac{3}{4}=0.75=75 \%$, to solve problems, justifying choice of method used.

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I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.

MNU 2-11
I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods.

## MNU 2-03b

I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use.

MNU 2-10b
I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value.

MNU 2-02a
12. Estimate, then measure and mark out a distance of 100 metres on the school field.

Measure the times of 10 pupils in your class each running this distance (100 metres). Record the times to the nearest $100^{\text {th }}$ of a second and rank the runners in order.

Uses the comparative size of familiar objects to make reasonable estimations of length, weight, area and capacity.

Estimates to the nearest appropriate unit, then measures accurately: length, height and perimeter in millimetres (mm), centimetres (cm) and metres ( $m$ ); distances in kilometres (km); weights in grams (g) and kilograms (kg); capacity in millilitres (ml)and litres (I)

Chooses the most appropriate measuring device for a given task, reading scales accurately, carrying out the required calculation and recording results in the correct unit.

Chooses the most appropriate timing device in practical situations and records using relevant units, including hundredths of a second.

Reads, writes, orders and sequences sets of decimal fractions with up to at least 3 decimal places.

