# Mathematics Stage 4 (Year 7) – summative assessment package – question bank



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This document is part 1 of 3 of a summative assessment package designed to assess the outcomes from Unit 3 of the Department of Education’s [Stage 4 (Year 7) sample scope and sequence [DOCX 282KB]](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-sample-scope-and-sequence.docx).

* Part 1: Question bank
* Part 2: [Sample class test [DOCX 588 KB]](education.nsw.gov.au/content/dam/main-education/en/home/schooling/curriculum/mathematics/mathematics-s4-assessment-sample-class-test.docx)
* Part 3: [Annotated sample responses [DOCX 870 KB]](education.nsw.gov.au/content/dam/main-education/en/home/schooling/curriculum/mathematics/mathematics-s4-assessment-annotated-sample-responses.docx)

## Outcomes to be assessed

**Core outcomes being assessed:**

* develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing, and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly **MAO-WM-01**
* compares, orders and calculates with integers to solve problems **MA4-INT-C-01**
* represents and operates with fractions, decimals and percentages to solve problems **MA4-FRC-C-01**

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The outcomes chosen are based on this assessment being implemented during Term 2 of the Department of Education’s  [Stage 4 (Year 7) sample scope and sequence [DOCX 282KB]](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/mathematics/media/documents/mathematics-s4-sample-scope-and-sequence.docx), after the unit ‘Representing numbers’.

As a result, the outcomes **MA4-INT-C-01** and **MA4-FRC-C-01** are partially assessed, and related Stage 3 content is considered. The task is complemented by using the ‘Portfolio’ task in Term 3 to collect evidence and monitor progress in these and related outcomes.

## Question bank

The questions in this ‘Question bank’ are designed to support the development of a class test, such as the ‘[Sample class test’ [DOCX 588 KB]](education.nsw.gov.au/content/dam/main-education/en/home/schooling/curriculum/mathematics/mathematics-s4-assessment-sample-class-test.docx). The test will provide opportunities for students to demonstrate their knowledge of the content points related to the included outcomes.

Sample answers with marking guidelines have been provided in the file ‘[Annotated sample responses’ [DOCX 870 KB]](education.nsw.gov.au/content/dam/main-education/en/home/schooling/curriculum/mathematics/mathematics-s4-assessment-annotated-sample-responses.docx) and give examples of how to interpret responses against the Common Grade Scale ([bit.ly/commongradescale](https://bit.ly/commongradescale)).

**Question 1 (MA4-FRC-C-01)**

Consider which of the following shows a difference that is more than one half.

1. $\frac{7}{8}-\frac{2}{8}$
2. $\frac{8}{9}-\frac{5}{9}$
3. $\frac{7}{12}-\frac{5}{12}$

Give reasons why each expression is more or less than one half. Use diagrams to support your reasoning where appropriate.

**Question 2 (MA4-FRC-C-01)**

Sienna has been asked which is larger, $\frac{1}{3}$, $\frac{1}{4}$, or $\frac{1}{5}$. She has drawn the diagrams below to help compare the 3 fractions.



1. Explain why Sienna believes $\frac{1}{5}$ is the largest of these 3 fractions.
2. Is Sienna correct? Provide reasons and diagrams to explain why or why not.

**Question 3 (MA4-FRC-C-01)**

By first circling the smallest and largest decimal from the list below, subtract the smallest decimal from the largest decimal.



**Question 4 (MA4-FRC-C-01)**

Kasha is wanting to purchase a new laptop and is shopping around for the best deal.

* Shop 1 has the laptop she wants for $1100 with a sale of 25% off and since she holds a membership card the shop will take a further 10% off the sale price.
* Shop 2 has the same laptop she wants for $1000 with a sale of 25% off.

Kasha thinks that Shop 2 is the better deal since it is a cheaper price to begin with.

Is Kasha correct? Provide mathematical arguments to justify your decision.

**Question 5 (MA4-FRC-C-01)**

Find $\frac{3}{5}$ of $40 using the visual representation.



**Question 6 (MA4-FRC-C-01)**

What number sentence is represented by the diagram below?



**Question 7 (MA4-INT-C-01)**

Show that $-5$ and 4 are 9 units apart using a visual representation.

**Question 8 (MA4-INT-C-01)**

What is the value of A, represented on this number line?



**Question 9 (MA4-FRC-C-01)**

Determine the possible value of 2 integers that share a common factor of 12.

**Question 10 (MA4-INT-C-01)**

1. Describe the temperature $-7^{o}C$ in terms of how hot or cold it is in your local area.
2. Describe what would happen to the temperature $-7^{o}C$ if the magnitude was increased but the direction remained the same.
3. Describe what would happen to the temperature $-7^{o}C$ if the magnitude stayed the same but the direction changed.

**Question 11 (MA4-INT-C-01)**

David believes that $-5>2$, since 5 is larger than 2.

Is he correct? Explain your reasoning using diagrams where appropriate.

**Question 12 (MA4-INT-C-01)**

Which integer is represented by the ‘?’ symbol? Give reasons to support your answer.



**Question 13 (MA4-FRC-C-01)**

Which of these diagrams does not represent $\frac{3}{5}$?

|  |  |
| --- | --- |
| 1.
 | A circle that has been split into 5 equal sectors, 3 of these sectors are shaded.  |
|  | An area model, 2 by 5, with 6 parts shaded.  |
|  | A bar model, with 5 equal parts, where 3 parts are shaded.  |
|  | A bar model with 8 equal parts, 3 of which are shaded.  |

**Question 14 (MA4-INT-C-01)**

What integer is represented by the image below? Explain your answer.



**Question 15 (MA4-FRC-C-01)**

Ari and Gabriel order pizzas from different shops. Each pizza is the same size although they have been cut differently. Ari’s pizza is cut into 6 equal pieces and Gabriel’s is cut into 8 equal pieces. Ari and Gabriel both start eating their pizza.

What is the minimum number of whole pieces that each of them needs to eat for them to eat the same amount of pizza? Explain your answer, including diagrams where appropriate.

**Question 16 (MA4-FRC-C-01)**



1. Using the fraction wall, or otherwise, list 3 equivalent fractions of $\frac{1}{2}$.
2. Using the fraction wall, or otherwise, simplify $\frac{6}{8}$.

**Question 17 (MA4-FRC-C-01)**

Hiromi believes that the fractions $\frac{1}{2},\frac{2}{5},\frac{3}{8}$ are written in order of smallest to largest since both the numerator and denominators are in order from smallest to largest.

Is Hiromi correct? Justify your answer with mathematical reasoning and diagrams where appropriate.

**Question 18 (MA4-FRC-C-01)**

Using only the digits 2, 4, 6 and 8, place a number in the blank spaces to make the statement true. Each digit can only be used once.



**Question 19 (MA4-FRC-C-01)**

Consider the number line below.



Accurately plot the number 3.6 on the number line.

**Question 20 (MA4-FRC-C-01)**

Using the visual representation, or otherwise, round 3.89 to the nearest tenth. Explain your solution.



**Question 21 (MA4-FRC-C-01)**

Accurately place the numbers $\frac{1}{4}$, 85% and 110% on this number line.



## References

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