Student Name: _____	**Class:** _____
Student ID: _____	**Date:** {{DATE}}

Assessment Details

Duration: 45 minutes	**Total Marks:** 100
Topics Covered:	• Ratios, Proportions, and Unit Rates • Real-World Applications

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

Section A: Multiple Choice [20 marks]

Question 1 [2 marks]

Which of the following ratios is equivalent to 2:3?

A) 4:5

B) 4:6

C) 6:9

D) 8:12

Question 2 [2 marks]

If a recipe for making cookies requires a ratio of 2 cups of flour to 1 cup of sugar, and you want to make half the recipe, what would be the new ratio of flour to sugar?

A) 1:1/2

B) 1:1

C) 2:1

D) 1:2

Question 3 [2 marks]

A bicycle is on sale for $80, which is 2/5 of its original price. What was the original price of the bicycle?

A) $100

B) $150

C) $200

D) $250

Section B: Short Answer Questions [40 marks]

Question 4 **[8 marks]**

A pencil costs $0.50 and weighs 0.1 kilograms. What is the cost per kilogram of the pencil?

Question 5 **[8 marks]**

A bakery sells 250 loaves of bread in 5 hours. What is the rate of bread sold per hour?

Question 6 **[8 marks]**

If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?

Section C: Performance Task [40 marks]

Question 7 **[15 marks]**

A school is planning a field trip to a museum. The bus rental company charges $200 plus an additional $5 per student. If 30 students are going on the trip, what is the total cost per student, assuming the fixed cost is split equally among all students?

a) Calculate the total cost of the trip [5 marks]

b) Calculate the cost per student [5 marks]

c) Explain your reasoning [5 marks]

Additional Work Space

Additional Work Space

Section D: Extended Response [20 marks]

In this section, you will be required to provide detailed solutions to problems that involve ratios, proportions, and unit rates. You should show all working and explain your reasoning clearly.

Question 8 **[10 marks]**

A water tank can hold 1200 liters of water. If 3/8 of the tank is already filled, what percentage of the tank is still empty?

Question 9 **[10 marks]**

A bakery sells a total of 480 muffins per day. They sell a combination of blueberry and banana muffins. If the ratio of blueberry muffins to banana muffins is 3:5, how many of each type of muffin are sold per day?

Section E: Mathematical Investigations [20 marks]

In this section, you will be required to conduct mathematical investigations and provide detailed reports on your findings. You should use mathematical models and techniques to analyze and solve problems.

Investigation 1

Investigate the relationship between the perimeter and the area of a rectangle. How do the ratios of the sides affect the area and perimeter?

Investigation 2

A car travels from City A to City B at an average speed of 60 km/h. On the return trip, the car travels at an average speed of 40 km/h. What is the average speed of the car for the entire trip?

Section F: Real-World Applications [20 marks]

In this section, you will be required to apply mathematical concepts to real-world problems. You should use ratios, proportions, and unit rates to solve problems in a variety of contexts.

Question 10 **[10 marks]**

A company produces two products, A and B. The ratio of the production costs of A to B is 2:3. If the production cost of A is $2000, what is the production cost of B?

Question 11 **[10 marks]**

A water bottle can hold 1.5 liters of water. If the water bottle is filled at a rate of 0.5 liters per minute, how many minutes will it take to fill the bottle?

Section G: Review and Reflection [10 marks]

In this section, you will be required to review and reflect on your learning throughout the course. You should demonstrate an understanding of the key concepts and how they can be applied in different contexts.

Review Questions

Answer the following questions to demonstrate your understanding of the course material.

Question 12 **[5 marks]**

What is the difference between a ratio and a proportion?

Question 13 **[5 marks]**

How can you use unit rates to compare the prices of different products?

Glossary

The following terms are used throughout this document:

Ratio

A way of comparing two quantities by division.

Proportion

A statement that two ratios are equal.

Unit Rate

A ratio that has a denominator of 1.

References

The following resources were used in the development of this document:

Textbook

Mathematics for Year 10, published by XYZ Publishers.

Online Resources

Various online resources, including Khan Academy and Math Open Reference.

Appendix

The following appendices are included:

Appendix A: Formulae

A list of formulae used throughout the document.

Appendix B: Tables and Charts

Tables and charts used to support the explanations and examples.

PLANIT TEACHERS

Year 10 Mathematics Assessment

Student Name: _____	**Class:** _____
Student ID: _____	**Date:** {{DATE}}

Assessment Details

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D) $250

Section B: Short Answer Questions [40 marks]

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Additional Work Space

Additional Work Space