

Grade 9 Assessment of Mathematics, 2001–2002

Tasks

Applied Program




Education
Quality and
Accountability
Office

Directions to Students about Answering Tasks

1. For this part of the assessment, make sure you have the following items along with *Booklet 2*:
 - a pencil and an eraser or a pen
 - a scientific or graphing calculator
 - a ruler and a protractor
2. Do all of your work (even your rough work) in *Booklet 2*.
3. You will work in the booklet on two different days. Each day you will have 40 min to do 3 tasks. Allow about 15 min for each of the first two tasks and about 10 min for the third. Give yourself time to answer all of the questions.
4. Figures in this section are not drawn to scale.
5. The tasks are designed to allow you an opportunity to show what you know and what you can do. Provide as much information as you can to show your understanding. Your teacher may be marking some of your work. In addition, someone who does not know your work will mark all of it, including what your teacher has marked. So, you must provide clear, well-organized answers to illustrate your complete understanding and ability to communicate in mathematics.
6. Make sure you follow directions from the Key Words and Phrases in Instructions sheet. It is provided for you so you will know the kind of question that is being asked.

For example, the question might ask you to “**Show your work.**” Read the Key Words and Phrases in Instructions sheet. It says to record all calculations. If you use your calculator, you need to show what calculations you do. If you sketch a graph in the process of getting to your solution, show the sketch and label it. Use proper and correct mathematical conventions when you present your work.
7. When using a calculator, write down the numbers and operations that you carried out on the calculator.

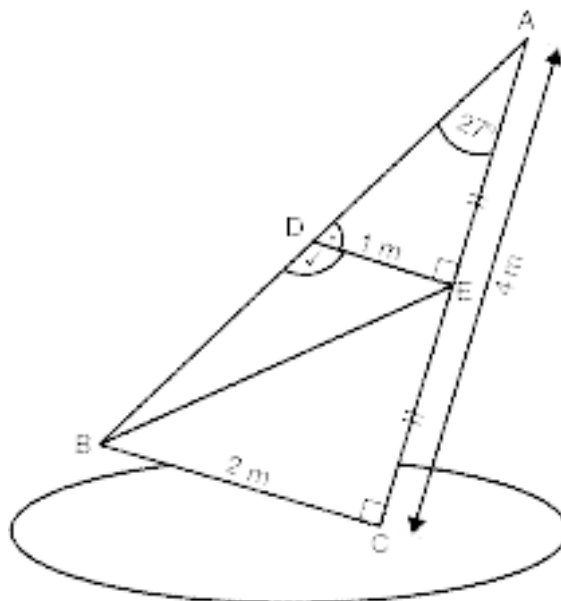
For example: Find the area of a circle with a diameter of 7 cm.

You need to write $A = \pi(3.5)^2$ as well as the answer you got on your calculator.
8. There are always many different ways to solve a problem. Use your broad range of mathematical knowledge to present a complete and creative solution to each question.
9. You have **40 min** to work.
10. When you see the  sign, you have completed the work for the day. Check your answers. Then wait quietly for directions from your teacher.

Task 1: The Sailboard

Jonathan likes to windsurf. He wants a three-colour sail for his sailboard.

- a) Complete the chart below by
- **determining** the measures of $\angle ADE$ and $\angle BDE$
 - **giving reasons for your answers.**



Angle	Measure	Reasons
$\angle ADE$ (✓)		
$\angle BDE$ (✓)		

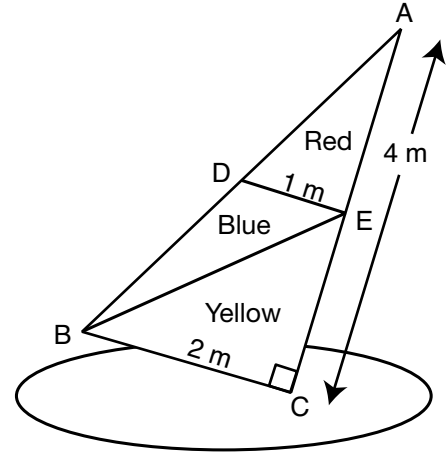
- b) Jonathan wants coloured trim along the segment BE of the sail.
Calculate the length of trim he will need.
Show your work.

Hint:
 $BC = 2 \text{ m}$
 $CA = 4 \text{ m}$
 $CE = EA$

c) Jonathan wants a sail with three colours.

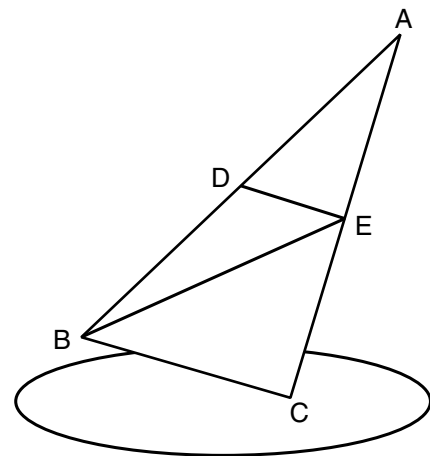
The table below shows the colours of material available and the cost.

Complete the table.



Colour	Cost of material (\$/m ²)	Area of section (m ²)	Cost of section (\$)
Yellow	5.10		10.20
Blue	4.40	1	
Red	4.50		
Total			

d) Jonathan decides to make the three sections of the sail, using only **two** colours. **Identify** and record on the diagram which colour should be used for each section of the sail so that the total cost is as **low** as possible. **Give reasons for your answer.**



Task 2: The Mechanic



Troy works as a mechanic at Quick Lube. He does oil changes on cars. He is paid a flat rate every day **plus** a certain amount for each oil change he does.

His total pay for the day, T , in dollars, is given by the formula

$$T = 5c + 25$$

where c is the number of oil changes he does that day.

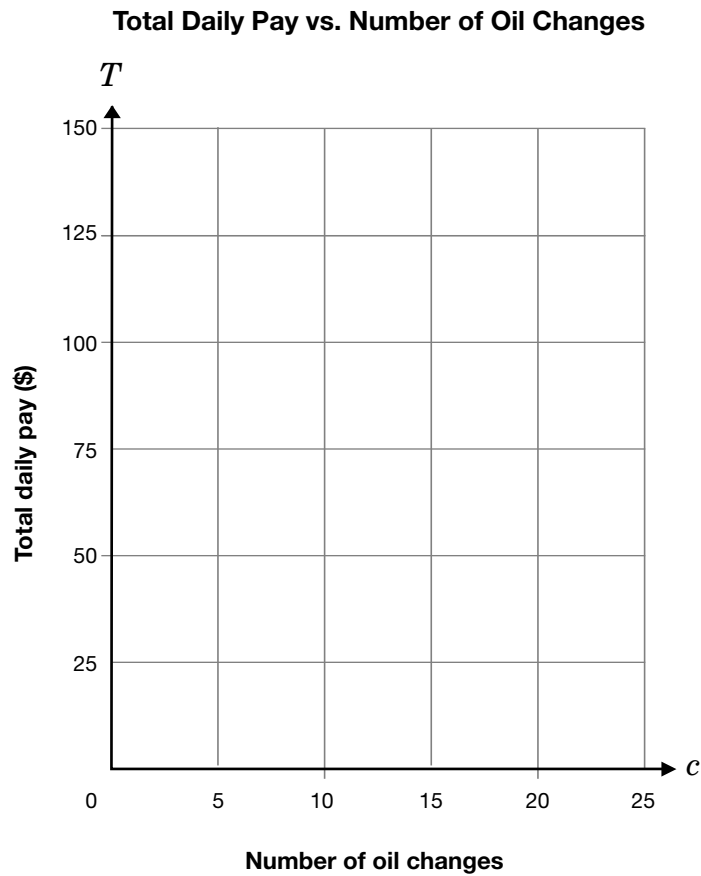
- a) One day Troy does 10 oil changes. Use the formula to **calculate** his total pay. **Show your work.**

- b) **Complete** the chart.

Number of oil changes, c	Total pay, T (\$)
0	25
5	50
10	
15	100
20	

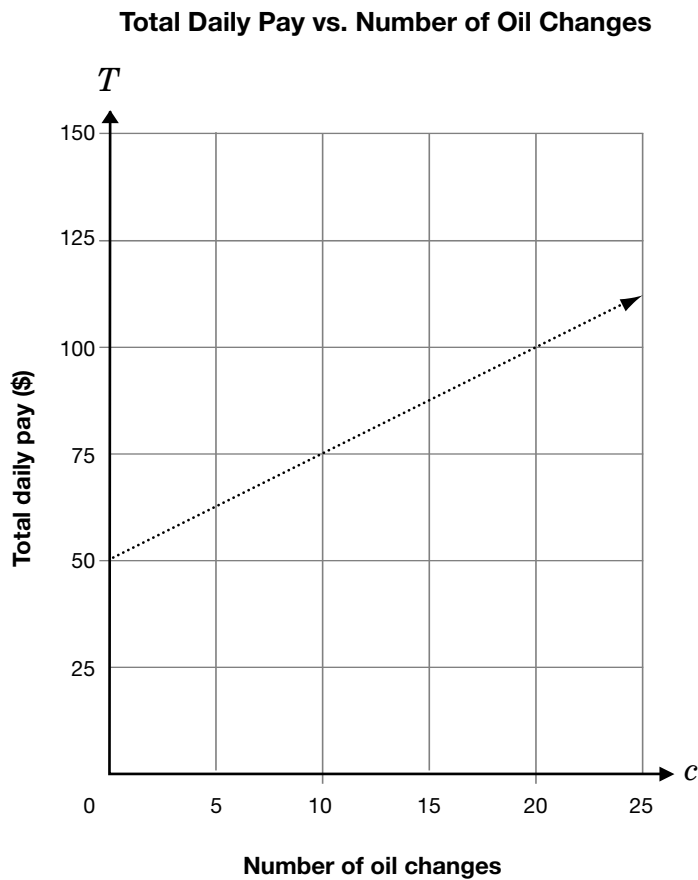
c) **Explain** what the numbers 5 and 25 in the formula $T = 5c + 25$ tell you about how Troy is paid.

d) **Graph** the relationship between T and c .

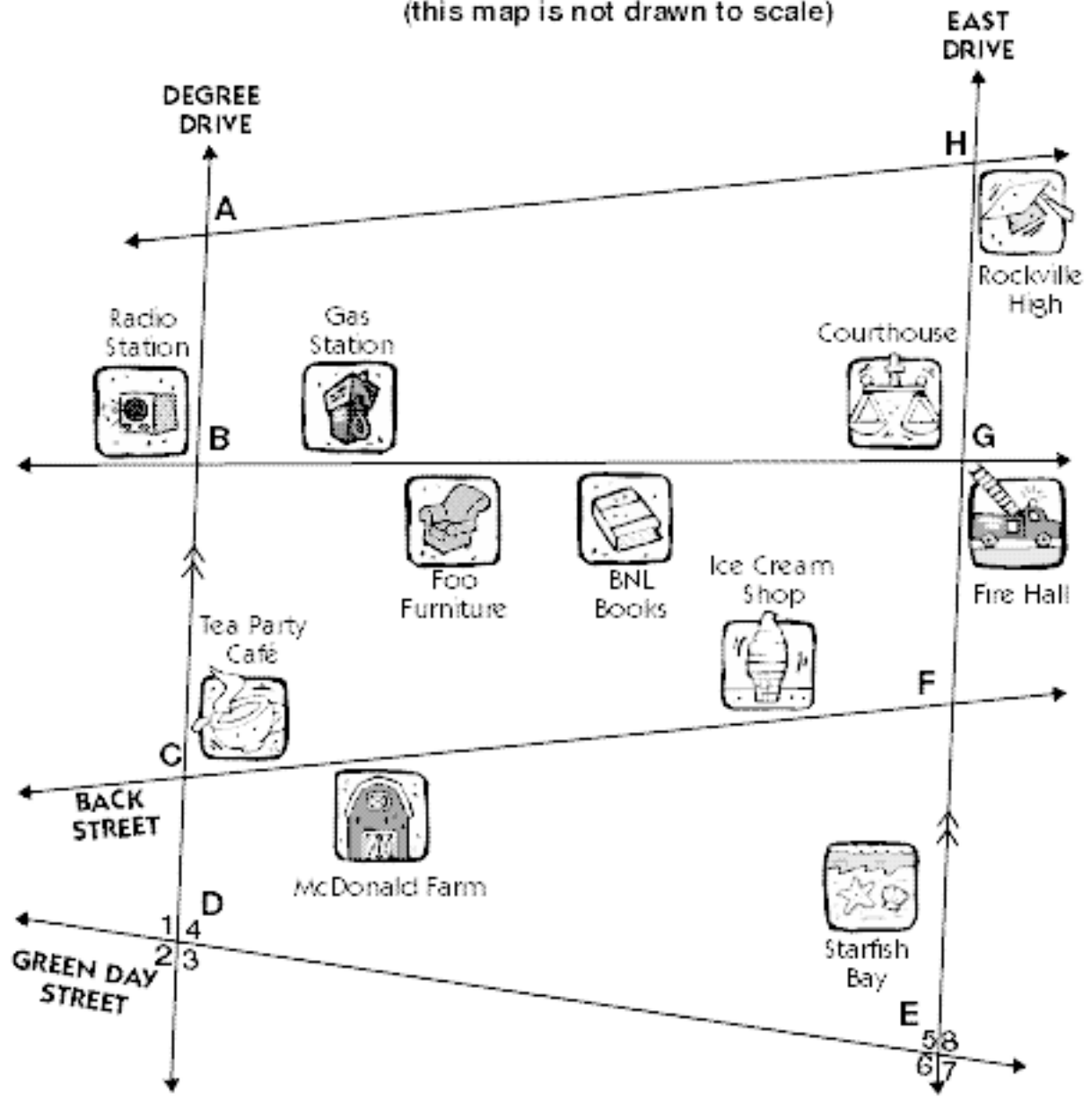


- e) With his pay for today Troy needs to pay his phone bill, which is \$85. Use the formula $T = 5c + 25$ to determine how many oil changes he must do to have enough money to pay the phone bill.
Show your work.

- f) Surjit does oil changes at a different shop. This graph shows her total daily pay.
Determine who earns more **per oil change**, Troy or Surjit.
Show your work or **give reasons for your answer.**



Town of Rockville
(this map is not drawn to scale)



- h) A radio station has hidden a new car in Rockville. The first listener to locate the car will win it. The radio station has released the following clues.

Use the clues and the map of Rockville to find the location of the hidden car.

Show all of your work on the map and **label** equal angles and equal line segments with symbols.

Clue 1:

- X is along BACK STREET at the **midpoint** of the block (the midpoint of CF).
- Mark** this midpoint X.
- Use symbols to **mark equal line segments**.

Clue 2:

- Join** point A to point X with a straight line.

Clue 3:

- Bisect** the angle at the Rockville High intersection called $\angle AHG$.
- Draw** the angle bisector and **extend** the line to meet AX.
- Mark** Y on the line segment AX where the two lines meet.
- Mark** the equal angles with symbols.

Clue 4:

- The car is hidden **3 cm from Y along the line segment YH**. **Find** this point.
- Mark it with an asterisk or a big star ★.

In which building is the new car hidden? _____

Town of Rockville
(this map is not drawn to scale)

