

# Tasks

## Academic 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.

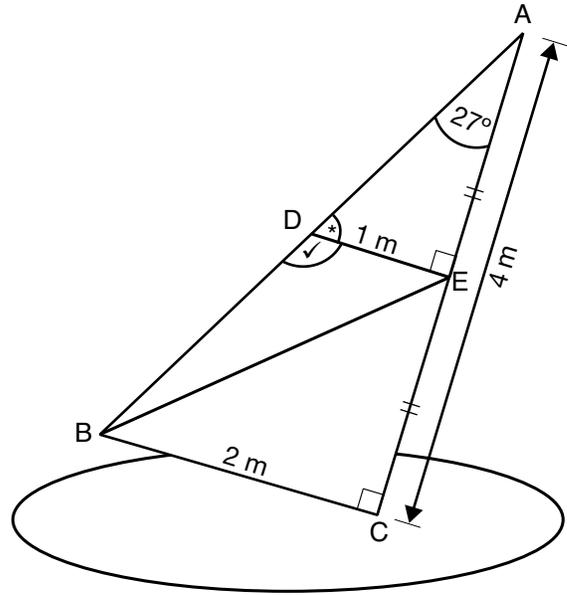
For example: Find the area of a circle with a diameter of 7 cm.

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
$\angle ADE$ (*)		
$\angle BDE$ (✓)		

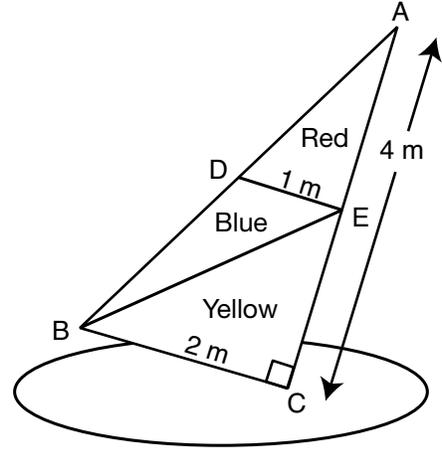
- b) Jonathan wants coloured trim along the segment BE of the sail.  
**Calculate** the length of trim he will need.  
**Show your work.**

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

c) Jonathan wants a sail with three colours.

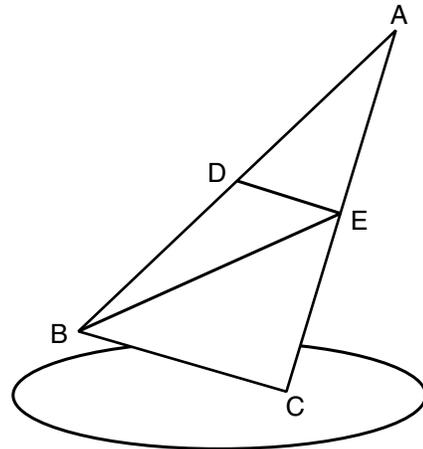
The table below shows the colours of material available and the cost.

**Complete** the table.



Colour	Cost of material (\$/m <sup>2</sup> )	Area of section (m <sup>2</sup> )	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: Stretch Signs Basketball Contract

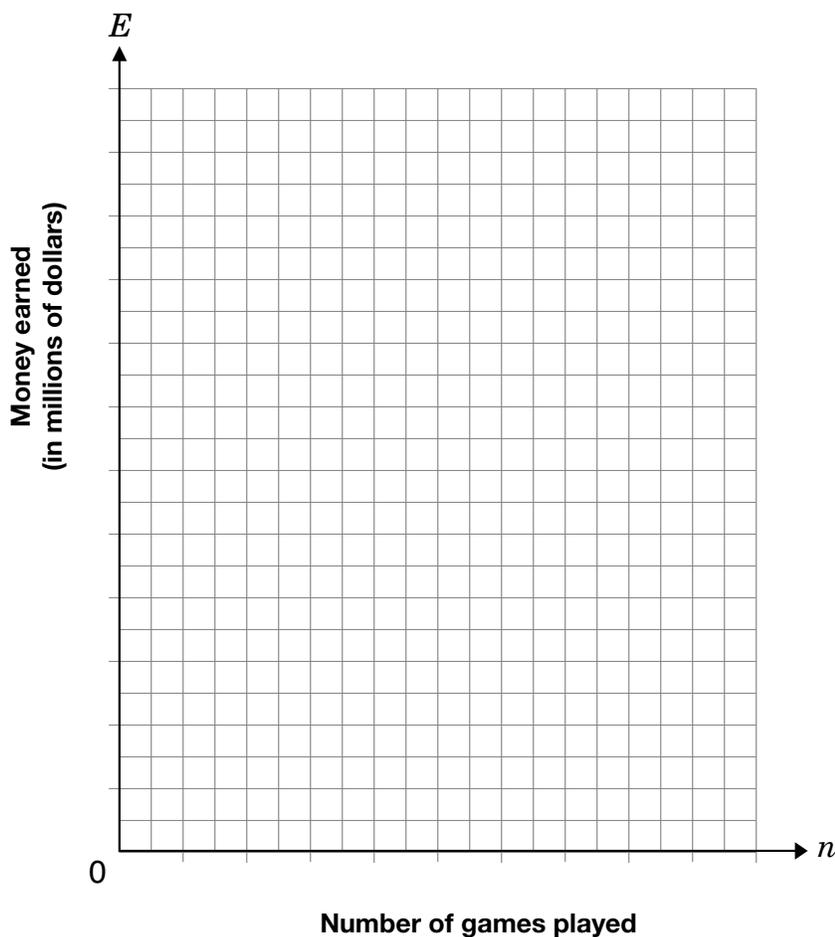
When Stretch Gordon signed a contract to play basketball for the Toronto Raptors, he received a **one-time \$250 000 signing bonus**. His contract said that he would also receive **\$100 000 for each game he plays**.

The Raptors are scheduled to play **85 games** this season.

- a) Create a table of values that will show some of the possible amounts Stretch might earn throughout the first **season**. Number of games played is represented by  $n$  and money earned by  $E$ .

Number of games played, $n$	Money earned, $E$ (in dollars)
10	
20	

- b) **Graph** the information to show his earnings for the **season**. Use a suitable scale. Change the money values in your table to millions of dollars before starting.



c) i) **Write an equation** relating Stretch's earnings to the number of games he plays.

ii) **Define** your variables, including units.

iii) **Explain** what **the numbers** in your equation represent for Stretch.

d) How much money will Stretch make if he plays 44 games this season?  
**Show your work.**



- e) Stretch's twin brother, Rory, has been offered a different contract. The following equation defines the offer:

$$E = 95\,000n + 450\,000$$

$E$  represents Rory's total earnings in dollars and  $n$  represents the number of games Rory plays.

Is this a better offer than Stretch's? **Give reasons for your answer** by comparing the two offers, reporting mathematical details about the comparison.

**Note:**

85 games are scheduled but we don't know how many Rory or Stretch will actually play.

## Task 3: Fitness Club

Suzanne wants to join a fitness club. Different clubs have different fee structures.

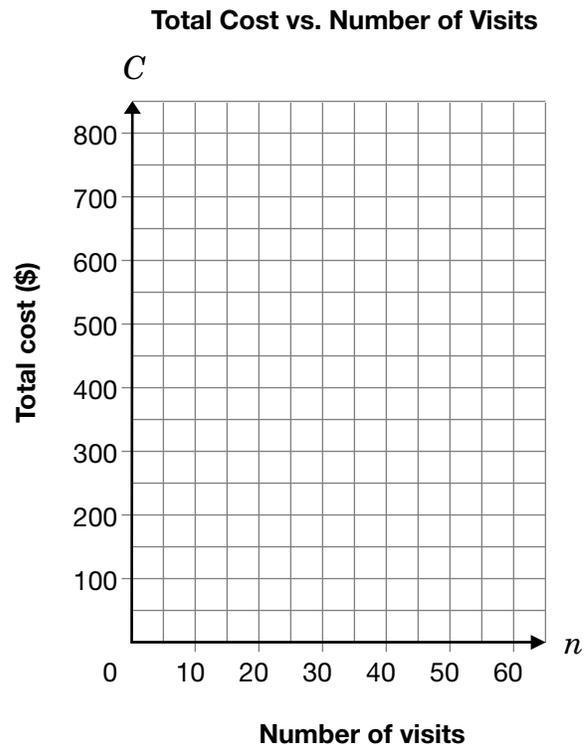
Gym Plus charges a membership fee of \$200. In addition, Suzanne would have to pay \$10 for each visit to the club.

- a) **Calculate** the **total** cost (membership fee plus the cost of visits) if Suzanne joins Gym Plus and visits the club 20 times. **Show your work.**

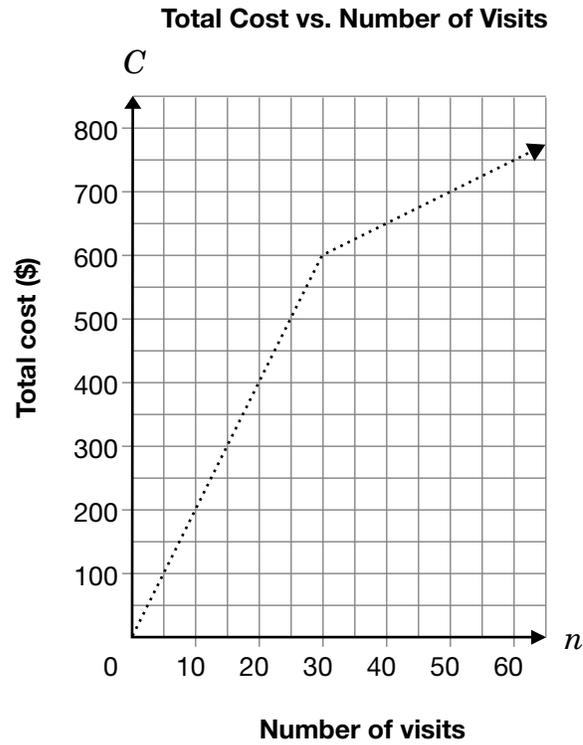


- b) **Graph** the relationship between the **total** cost,  $C$ , in dollars, of joining Gym Plus and making  $n$  visits to the club.

**Describe** the information you used to graph your line.



- c) Another club, Fit City, has a different fee structure, shown in the graph below.  
**Describe** the fee structure of Fit City, giving details about costs and number of visits.



- d) A third club, Activity World, has a different fee structure. Suzanne would have to pay a membership fee and a certain amount every time she visits the club.

However, the amount she pays each time is reduced with each visit she makes.

**Circle** the graph that best represents this fee structure.

**Give reasons** why you chose the graph that you did.

**Total Cost vs. Number of Visits**

