6493MS: Assignment 1

Before doing this assignment you need to work through Chapters 1, 2 and 3 of your textbook:

New Century Maths Mathematics Standard 2 Year 12

By Klaas Bootsma, Sarah Hamper, Margaret Willard, Robert Yen

(see your OLS for more details)

What you have to do

Handwrite the answers to the following questions **on your own paper**, showing all necessary working. Do not write on the question paper.

There are 3 sections in this assignment:

> ➢ Interest and Depreciation (SECTION A)
> ➢ Ratios and Rates (SECTION B)
> ➢ Equations and Linear Functions (SECTION C)

Attempt all questions in each section.

Leave plenty of space around your answers for your teacher's comments and ways to improve your work.

Take care drawing graphs. Use a ruler and sharp pencil for the greatest accuracy.

If you have studied the work in your textbook, and you are stuck on an assignment question, you can contact us for help.

It is important to present your work clearly to avoid having it returned to you unmarked as a non-serious attempt.

Section A: Interest and Depreciation

1 Tara borrowed $15 600 over 4 years at 16% p.a. simple interest to buy a car.

  a) How much interest does Tara have to pay?

  b) How much does she repay altogether?

  c) What is Tara's monthly payment?

2 John purchased a wedding ring for his wife for $3500.

Use the formula $FV = PV(1+r)^n$ to calculate the value of the ring after 15 years if it appreciates at a rate of 4.8% p.a. (Answer to the nearest $100)

3 Jason invests $5700 for 6 years at an interest rate of 12% p.a. compounded quarterly.

  a) Use the formula $FV = PV(1+r)^n$ to calculate the future value of Jason's investment.

  b) Calculate the total compound interest earned over the 6 years of this investment.

4 ANZ shares paid a dividend yield of 3.8%. Reka had 450 shares with a market value of $23.00 each. Calculate the total dividend she received from the shares.

5 A forklift is purchased for $23 500. Using a declining balance rate of 14% p.a. find (to the nearest dollar):

  a) The salvage value of the forklift after 4 years.

  b) The amount of depreciation in the 4th year.

Section B: Rates and Ratios

1 Fully simplify the following ratios:

    a) 24:40

    b) 4 minutes: 2 hours

2 The ratio of a boy's weight to that of his father is 3:8. If the boy weighs 28.8 kg, how much does his father weigh?

3 A weed spray is made of wetting agent and herbicide in the ratio 97:3 respectively. To make 20L of weed spray, how much herbicide would be needed?

4 Mandy purchased 42L of petrol for $66.36. What was the cost per litre?

5 If a car uses 12L of fuel to travel 100 km, how much will it use to travel 375 km?

6 A tap is dripping at a rate of 32 drops per minute. If each drop contains 1.4 mL of water, calculate the number of litres dripping from the tap in a day.

7 Which of the following packet sizes of coffee is the best buy?

    a) Small: 150 g for $5.18
    b) Large: 1 kg for $45

Show working to justify your answer.

8 Mark cycled at a speed of 24 km/h for 40 minutes. How far did he travel?

9 A tennis ball is served and travels 18 m in 0.54 seconds before hitting the ground.

At what speed in km/h was the ball served?

Section C: Equations and Linear Functions

1   Solve the following equations showing all working:

a) $3(m-4) = 32$

b) $3y+17 = y+5$

c) $\dfrac{2x-7}{4} = 5$

2   a) for the formula $v^2 = u^2 + 2gs$, change the subject to g.

b) Hence find the value of g, correct to 2 decimal places when v = 10.5, u = 4.2 and s = 15.6.

3   Rosie has $42 000 in an account which grew to a future value of $46 560 after 3 years. If the interest is compounded yearly, use the formula $FV = PV(1+r)^n$ to find the interest rate per annum. Give your answer as a percentage to 1 decimal place.

4   The Wombat Tent Company weekly cost equation for making tent poles is

$C = 3000 + 0.5N$, where C is the cost and N is the number of tent poles produced that week. The weekly income equation is given by $I = 2.5N$ where I = income and N is the number of tent poles produced.

a)   Copy and complete the table of values below:

N	0	1000	2000	3000	4000
C					
I					

b)   Graph and label both linear functions on the grid provided on the next page. Use increments of 1000 on each axis. (Note: put N on the horizontal axis)
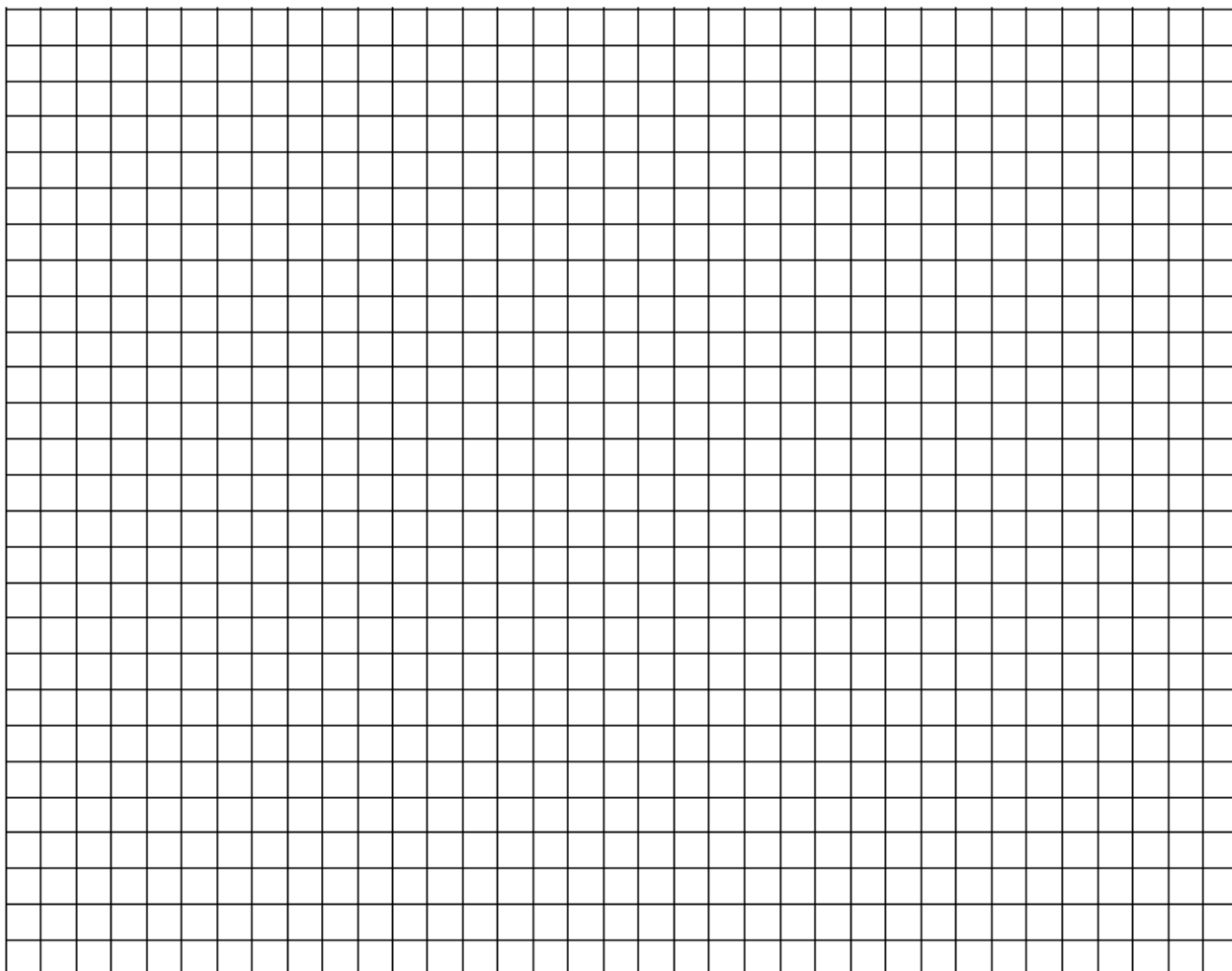
c)   What is the weekly fixed cost for the company?

d)   Find the gradient of the graph $I = 2.5N$ and explain what it means.

e)   How many tent poles must be produced for the company to make a profit?

Use for Section C question 4 (Remember to attach it to your assignment)

Checklist

I have:

- answered all questions on my own paper in my own hand-writing

- written clear working

- attempted all questions

- included all graphs.

If you are unable to complete this task for a specific reason, please contact your teacher to discuss alternative arrangements for demonstrating your skills and knowledge.