Edexcel
Functional Skills

Centre Number

Candidate Number

Mathematics

Level 2

14 – 18 November 2011
Time: 1 hour 30 minutes

Paper Reference
FSM02/01

You must have:
Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, compasses.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone until the end of the 5 day test window.

Signature: _____

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**

Information

- The total mark for this paper is 48.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- **Where you see this sign you must show clearly how you get your answers because marks will be awarded for your working out.**

Advice

- Read each question carefully before you start to answer it.
- Show all stages in the calculations.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

SECTION A: Pottery business

Answer all questions in this section.

Write your answers in the spaces provided.

1   Karen makes pottery mugs from clay.

Karen can make 4 mugs in one hour.

She works for $5\frac{1}{2}$ hours each day.

A customer orders 80 mugs.

(a) How many days will it take Karen to make the 80 mugs?

(2)

Use the box below to show clearly how you get your answer.

Karen uses 380 g of clay to make each mug.
She buys the clay in 12.5 kg bags.

(b) How many bags of clay will Karen need to buy to make the 80 mugs?

(4)

Use the box below to show clearly how you get your answer.

Karen also makes some vases.

She makes 16 vases from one bag of clay.
A bag of clay costs £14.46

Karen's other costs are £6.50 for each vase.

Karen wants to get a profit of 75% when she sells each vase.

(c) How much money does Karen need to charge for each vase?

(5)

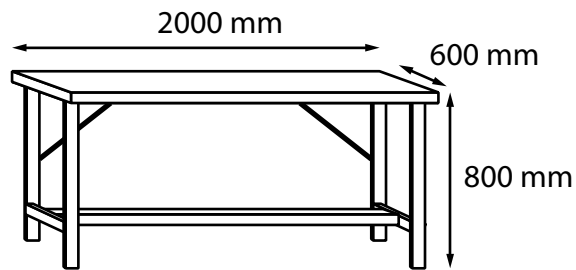Use the box below to show clearly how you get your answer.

(Total for Question 1 is 11 marks)

2 Karen is going to use one of the rooms in her house as a workshop.

There is already a cupboard in the room.
Karen wants to put this work bench in the room.

2000 mm

600 mm

800 mm

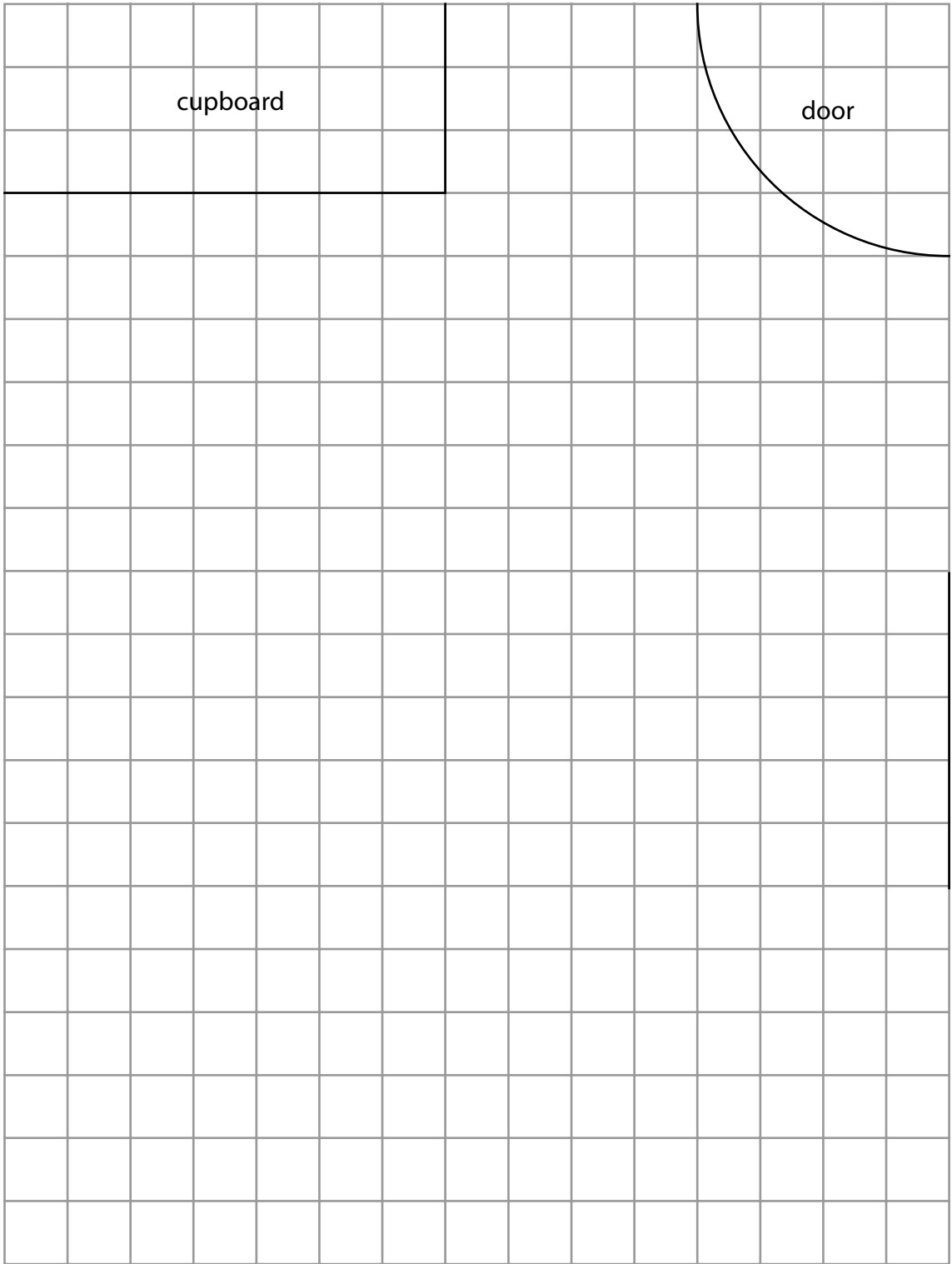| Work bench |
| :---: |
| width 2000 mm |
| depth 600 mm |
| height 800 mm |

Karen wants to put the work bench in a corner of the room.
She does **not** want to put the work bench under the window.

Karen draws a plan of the room on a grid.

Draw the work bench on the grid.

(2)

cupboard

door

window

Key: 1 cm on the grid = 200 mm in the room

(Total for Question 2 is 2 marks)

3 Karen needs to borrow some money from her bank.

Karen wants to show the bank manager that her pottery business is doing well.
She is going to present information about her business to the bank manager.

This table shows the number of mugs Karen sold each quarter for the last 2 years.
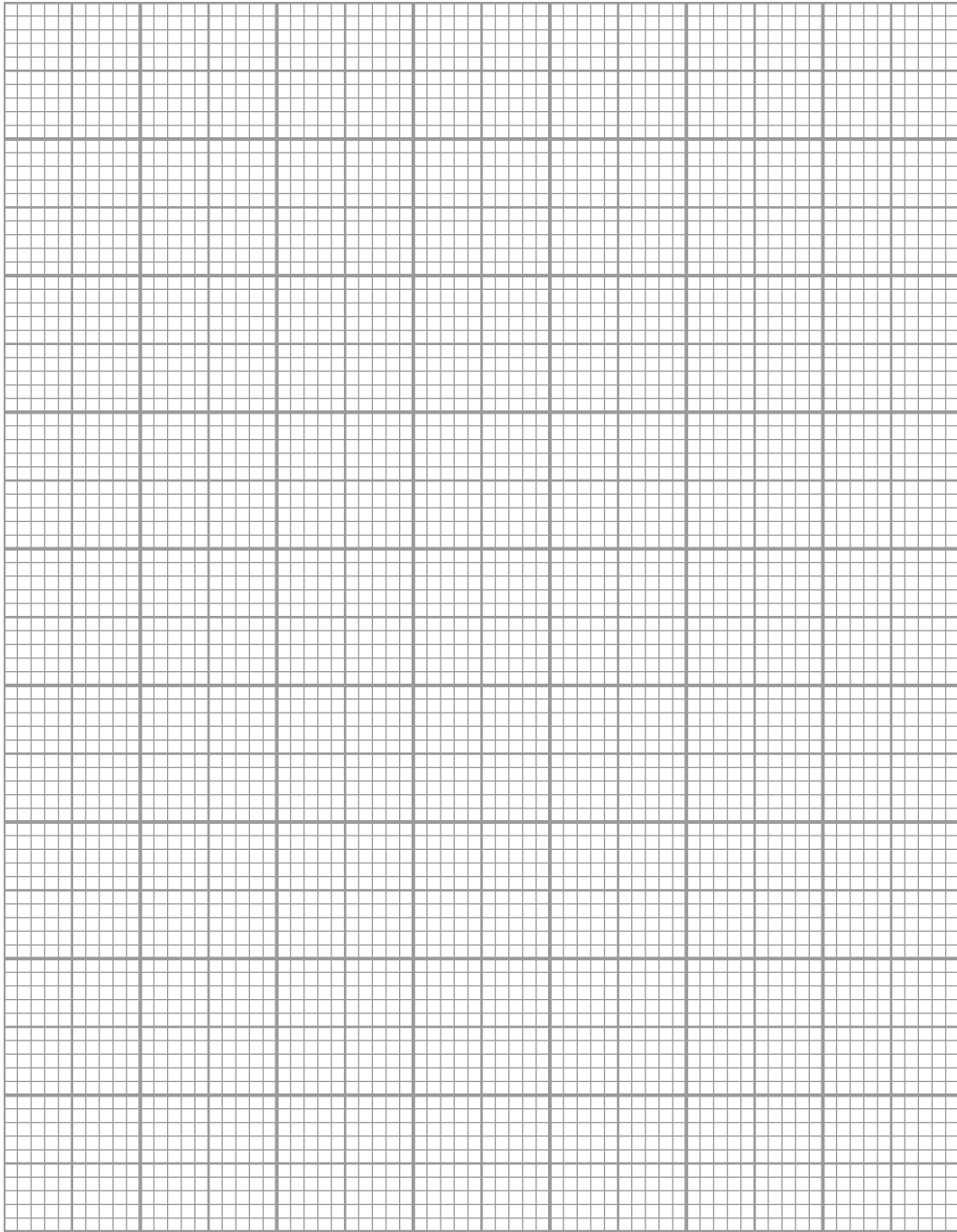
	Jan – Mar	**Apr – Jun**	**Jul – Sep**	**Oct – Dec**
2009	470	420	510	630
2010	490	540	770	820

Karen is going to display this information.

Draw a graph or chart for Karen.

(3)

(Total for Question 3 is 3 marks)

SECTION B: Working for an airline

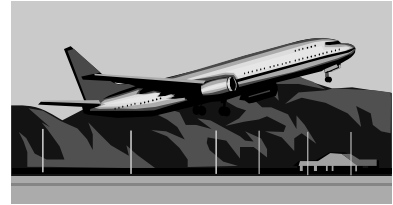**Answer all questions in this section.**

Write your answers in the spaces provided.

4 Tim is a pilot.

He starts work at 05 00

The plane Tim flies takes off from Gatwick airport at 06 30
The plane lands at Cairo airport 5 hours and 15 minutes after it leaves Gatwick.

> (a) How long has Tim been working when the plane lands at Cairo airport?
>
> **(1)**

Write your answer in the box below.

It takes 3 hours to get the plane ready to fly back to Gatwick.
It takes 5 hours and 30 minutes to fly back to Gatwick.

Pilots can work for a maximum of $14\frac{1}{4}$ hours in one day.

Tim works out that the plane is due to arrive at Gatwick more than $14\frac{1}{4}$ hours after he started work at 05 00

> (b) Is Tim right?
> Show why you think this.
>
> **(2)**

Use the box below to show clearly how you get your answer.

(Total for Question 4 is 3 marks)

5 Susan is one of the cabin crew on a different plane.
Cabin crew get an allowance to pay for meals.

Susan's allowance is £3.47 per hour from the time she leaves Gatwick until the time she gets back to Gatwick.

Susan is away from Gatwick for 78 hours.

While she is away she spends £84 of her allowance on meals.

(a) How much of her allowance does Susan have left?

(3)

Use the box below to show clearly how you get your answer.

Turn over ▶

The cabin crew sell items to passengers on the plane.
The cabin crew might get a bonus.

The bonus depends on the average amount each passenger spends.

The bonus is a percentage of the total amount the passengers spend on the plane.

The table shows information about the bonus.

Average amount each passenger spends	Bonus (percentage of the total amount the passengers spend)
less than £4	None
£4 - £5.99	5%
£6 - £7.99	7%
£8 and over	9%

There are 320 passengers on the plane.
The total amount the passengers spend is £2480

There are 8 cabin crew on the plane.
The cabin crew will share the bonus equally.

Susan thinks that each of the cabin crew will get a bonus of about £20

(b) Is Susan right?
    Show why you think this.

(6)

Use the box below to show clearly how you get your answer.

(Total for Question 5 is 9 marks)

6   Susan sells some drinks to a passenger on a plane.

The drinks cost a total of £18

The passenger wants to pay for the drinks in dollars ($).
The passenger pays with two 20 dollar notes.

Susan uses £1 = $1.64

(a)   How much change must Susan give the passenger?

(3)

Use the box below to show clearly how you get your answer.

(b) Show a check for part (a).

(1)

Write your check in the box below.

(Total for Question 6 is 4 marks)

7 The table shows the cost of hiring canal boats from a boatyard.

Boat	Medway	Tyne	Derwent	Wye
Length of boat	**47 ft**	**50 ft**	**66 ft**	**69 ft**
Jun 2 – Jun 8	£1175	£1465	£1740	£1920
Jun 9 – Jun 15	£990	£1235	£1470	£1670
Jun 16 – Jun 22	£1060	£1320	£1570	£1780
Jun 23 – Jun 29	£1120	£1395	£1660	£1870
Jun 30 – Jul 7	£1225	£1525	£1815	£2015

(The left side of the table is labelled **Cost per boat per week**)

(a) How much does it cost to hire the Tyne for one week, starting on June 16th?

(1)

Write your answer in the box below.

Steve and Chaya are going to go on holiday with four friends.
They are going to hire a canal boat for one week in June.

Steve is going to book the canal boat.
He knows that

• the hire company gives a discount of $\frac{1}{4}$ off the cost of hiring all canal boats in June
• the 6 people will share the cost of hiring the canal boat equally
• each person can afford to pay up to £225
• they want the canal boat with the greatest length they can afford.

(b) Which canal boat and which week should Steve book?

(5)

Use the box below to show clearly how you get your answer.

(Total for Question 7 is 6 marks)

Turn over ▶

8 Jerry wants to hire the Medway canal boat for 3 days.

The manager of the boatyard uses this formula to work out the total hire cost.

$$C = 120n + 400$$

C is the total hire cost in pounds

n is the number of days

The manager works out that the total hire cost for 3 days is £860

(a) Is the manager right?
Show why you think this.

(3)

Use the box below to show clearly how you get your answer.

Canal boats go through locks to get up to a higher level and to get down to a lower level.

Jerry plans a route for Tuesday.

He knows that
*   a canal boat travels a maximum distance of 4 miles in one hour
*   it takes an average of 15 minutes for a canal boat to go through a lock.

The route Jerry plans for Tuesday
*   is 20 miles long
*   has 14 locks.

Jerry only wants to travel for a maximum of 8 hours on Tuesday.

(b) Will Jerry be able to travel this route in less than 8 hours?

(3)

Use the box below to show clearly how you get your answer.

(Total for Question 8 is 6 marks)

9 On Saturday all 4 canal boats have to get back to the boatyard by 9 am.
The boats need to be ready by 3 pm.

For each boat to be ready it takes

- $2\frac{1}{2}$ hours to clean the boat

- 1 hour to fill the fuel tank and check the engine

- $\frac{1}{2}$ hour to fill the water tank.

There are 2 cleaning teams, so 2 boats can be cleaned at the same time.

Only 1 boat at a time can have its fuel tank filled and its engine checked.
Only 1 boat at a time can have its water tank filled.

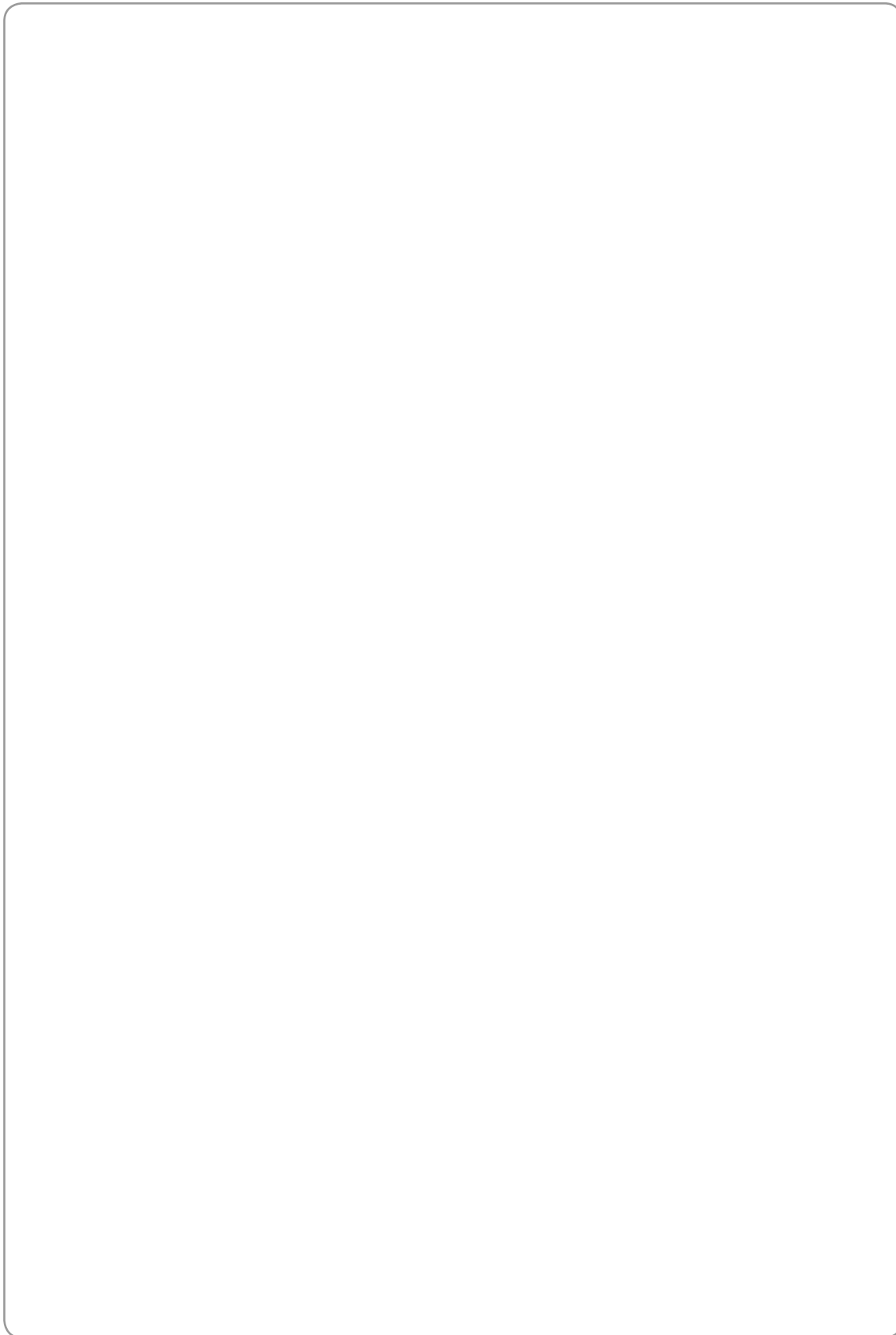The 4 boats all get back to the boatyard by 9 am.

The manager of the boatyard needs to make a time plan to get the 4 boats ready
by 3 pm.

Make a time plan for the manager.

(4)

Use the box below to show your time plan.

(Total for Question 9 is 4 marks)

TOTAL FOR PAPER IS 48 MARKS

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