Functional Skills Model Solutions

PassFunctionalSkills.co.uk

Book Functional Skills Exams

See our Functional Skills Course

More Free Revision Materials

Maths Level 2   Maths Level 1

English Level 2   English Level 1

Paper Code: FSQC210P

Highfield Functional Skills Qualification in Mathematics at Level 2

Level 2

Information for centres and learners

- Learners taking this examination must also complete papercode FSQN210P.
- Only remove the examination paper from the sealed envelope when instructed to do so.
- Under no circumstances should you use an unsealed examination paper.
- Complete **ALL** questions.
- Use **BLACK** or **BLUE** ink.
- You are **NOT** allowed any assistance to complete the answers. You **MAY** however use a **CALCULATOR**.
- Marks are awarded for **SHOWING** your **WORKING OUT**.
- Use a **PENCIL, ERASER, RULER** and **PROTRACTOR** (as necessary) when drawing diagrams and charts.
- **SIGN** the declaration before leaving.

The duration of this examination is **1 HOUR 50 MINUTES**. The examination consists of **16 QUESTIONS** and is worth **53 MARKS**.

Complete the following

First Name
(in full)

Middle Initial

Last Name

Date of Birth
(8 digits)

D D M M Y Y Y Y

Highfield Learner ID

Approved Centre Number *(5 digits)*

Nominated Tutor Number *(5 digits)*

Examination Date *(8 digits)*

D D M M Y Y Y Y

Is this a resit examination?   YES   NO

Examination Start Time *(24 hour clock)*

H H M M

Examination Finish Time *(24 hour clock)*

H H M M

Calculator Test

Learner declaration

I confirm:
- I removed the examination paper from the sealed envelope.
- I received no help in answering the questions in this examination paper.
- I am the person stated above on this form.
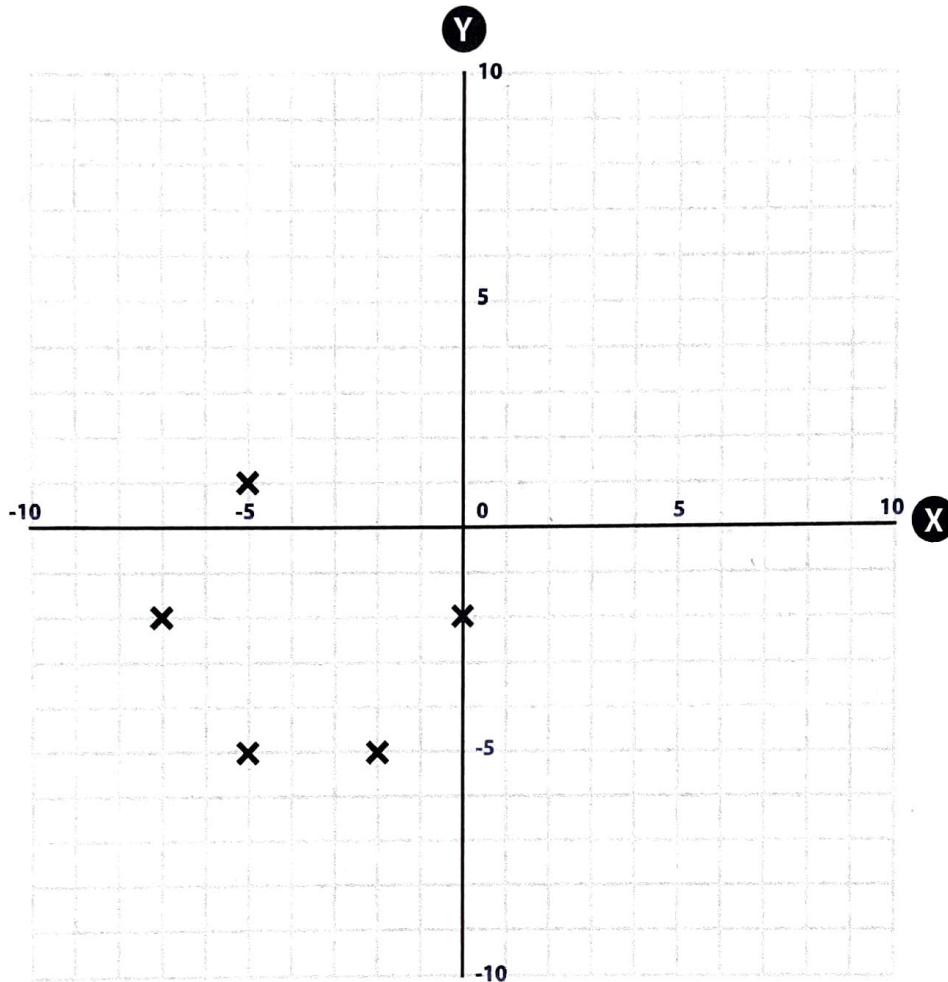- I will not discuss the content of the examination with anyone else.

Learner signature: ....

1

Five corners of a **hexagon** are drawn on the grid below.

What are the coordinates of the sixth corner?

Write the answer in the box below.   *(1 mark)*

Answer: ___$(-2, 1)$___

2

The diagram below shows an isosceles triangle with 2 equal sides and 2 equal angles, as marked.
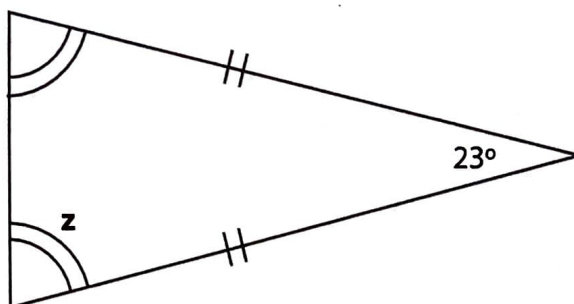
Calculate the value of angle z.

Diagram not to scale

23°

z

Show your working out and write the answer in the box below.   **(2 marks)**

$180° - 23° = 157°.$

$z = \dfrac{157°}{2} = 78.5°$

Answer: ____78.5____ °

3

The tallest point in England is 3209ft above sea level.

The lowest point in England is -9.8ft below sea level.

What is the difference between the tallest and lowest points in England?

Write the answer in the box below.   **(1 mark)**

$3209 - (-9.8) = 3218.8\text{ft}$

Answer: ____3218.8____ ft

4

Which of the following fractions is equivalent to 40%?

$$\frac{40}{1000} \qquad \frac{120}{300} \qquad \frac{4}{20} \qquad \frac{100}{40}$$

Write the answer in the box below.   *(1 mark)*

Answer: _____ $\frac{120}{300}$. _____

5

A company has a budget of eight hundred and ten thousand, five hundred and thirty pounds for a new project.

The first phase of the project costs £237,219.62

How much of the budget does the company have left after the first phase?

Show your working out and write the answer in the box below.   *(2 marks)*

£810 530 − £237 219.62 =

Answer: £ 5 73,310 -38

6

Put the following decimals in order from lowest to highest.

25.642   26.524   25.462   25.246

Write the answer in the box below.   *(1 mark)*

Answer: __25.246, 25.462, ~~25.642~~ 25.642, 26.524__

7

Convert 17 pints into litres.

5 pints = 2.84 litres

Show your working and write the answer in the box below.   *(2 marks)*

$\frac{17}{5} \times 2.84 = 3.4 \times 2.84 =$

Answer: __9.656__ litres

8

Which of the following values is the largest?

$\frac{850}{1000}$ $2\frac{1}{9}$ $\frac{7}{3}$ $2\frac{7}{550}$

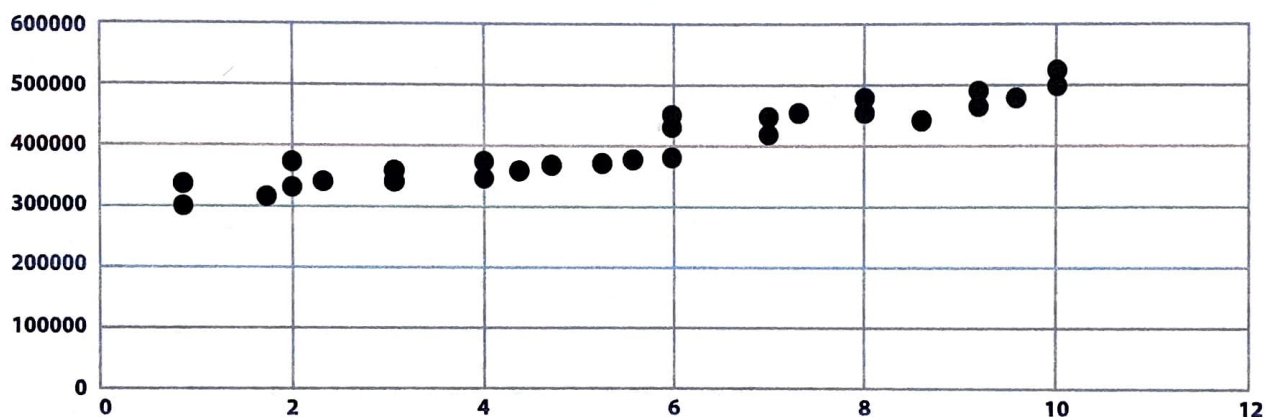Write the answer in the box below.   *(1 mark)*

Answer: __$\frac{7}{3}$__

9

Identify the types of correlation in the following scatter graphs.

Graph A
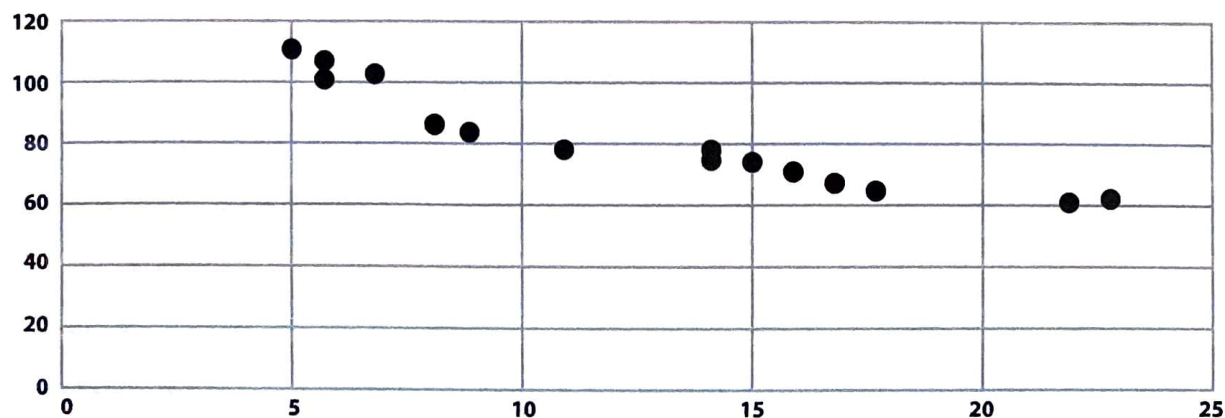
Graph B

Write the answers in the box below.   *(2 marks)*

Graph A: _Negative_____ Graph B: ___Positive._____

Scenario A

Lorry driving

10

You work as a lorry driver for Highfield Transport.

You receive your monthly wage slip.

Highfield Transport					
Payments	Units	Rate	Amount	Deductions	Amount
Salary	1	1843.71	£1843.71	PAYE Tax	£ 149-34
				National Insurance	£ 125-92
				Pension	£ 55-31
				Net Pay:	£ 1513-14

Your annual salary is £22,124.48. You have a tax-free allowance of £12,500. You need to deduct PAYE tax and National Insurance on the salary that you earn after this allowance.

PAYE tax is 18.62% on your earnings after your tax-free allowance.

National Insurance is 15.7% on your earnings after your tax-free allowance.

Your pension is 3% of your total monthly salary, before any tax deductions.

Complete your monthly wage slip above, calculating the PAYE tax, National Insurance, Pension and Net Pay.
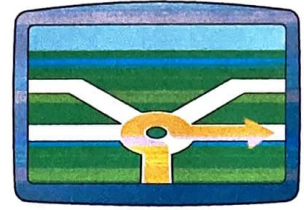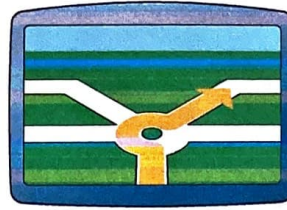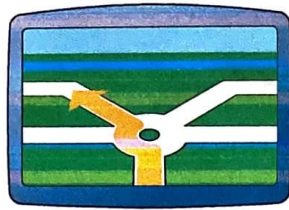
Show any workings in the box below. **(5 marks)**

22124.48 − 12500 = 9624.48   taxable (yearly)

$\Rightarrow \frac{9624.48}{12} = £802.04$ taxable (monthly)

£1843.71 − (149.34 + 125.92 + 55.31)

= £1513.14

Pension: 0.03 × 1843.71
= £55.31

PAYE: 0.1862 × 802.04
= £149.34

NI: 0.157 × 802.04
= £125.92

11

You are about to set off on a delivery. You are looking at the possible routes and how long each will take.

	Route A	Route B	Route C
Regular journey time:	105 minutes	70 minutes	60 minutes
Today's traffic forecast Warehouse to Delivery point:	Only 7/9 of regular journey time	Add 2/6 to regular journey time	Add 42% to regular journey time
Today's traffic forecast Delivery point back to Warehouse:	Only 8/9 of regular journey time	Add 1/5 to regular journey time	Add 28% to regular journey time

You will start at your warehouse, go to the delivery point, then return to the warehouse.

Considering the traffic forecasts for the journey to and from the delivery point, which route will be the fastest?

Show your working out and write the answer in the box below. **(7 marks)**

$(\frac{7}{9} \times 105) + (\frac{8}{9} \times 105) = 175$ mins (Route A total).

$(\frac{8}{6} \times 70) + (\frac{6}{5} \times 70) = 177.33$ mins (Route B total).

$(1.42 \times 60) + (1.28 \times 60) = 162$ mins (Route C total).

Answer: __Route C.__

12

You are looking at the journey times of your deliveries over 2 months.

This table shows the number of journeys you made each month and their duration.

Journey time (hours)	April	May
0 to 2	7	13
More than 2 to 4	4	10
More than 4 to 6	11	7
More than 6 to 8	5	3
More than 8 to 10	6	1

Use the data to estimate the difference in the mean journey time between the 2 groups.

Show your working out and write the answer in the box below.   **(7 marks)**

Midpoint	April		M x f (April)	May	M x f (May)
1	7		7	13	13
3	4		12	10	30
5	11		55	7	35
7	5		35	3	21
9	6		54	1	9 .
Total	33		163	34	108 .

$$MJT \ (April) = \frac{163}{33} = 4.94, \quad MJT \ (May) = \frac{108}{34} = 3.18$$

$$4.94 - 3.18 =$$

Answer: ___1.76___ hours

Scenario B

Craft shop

13

You make several craft items which you sell online.

One of the items you make is a wooden photo frame.

The photo frame is made of:

- A back board measuring 40cm x 25cm

- A top and a bottom piece measuring 45cm x 5cm each

- Two side pieces measuring 20cm x 5cm each

Make a plan of the pieces of wood that will make up the frame.

Use the graph paper on the next page to draw the 5 pieces of wood.

Use a scale of 1:5.

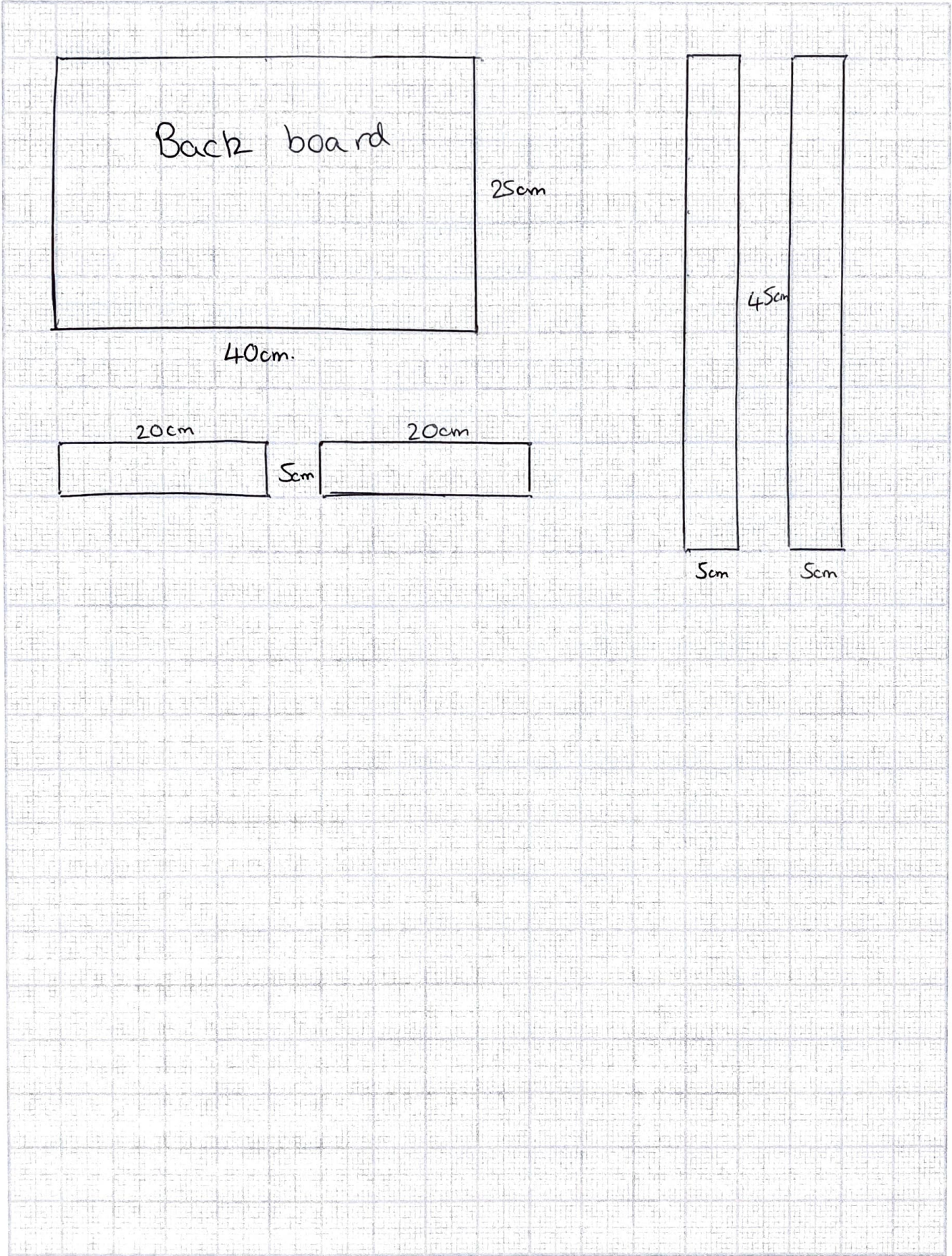Show any workings in the box below.   *(5 marks)*

Back board :   8cm x 5cm
Top   and   bottom :   9cm x 1cm.

Side   pieces :   4cm x 1cm.

Back board

25cm

40cm.

45cm

20cm

20cm

5cm

5cm

5cm

14

You send the photo frames in boxes, which you cover in paper.

Diagram not to scale

20 inches

12 inches

6 inches
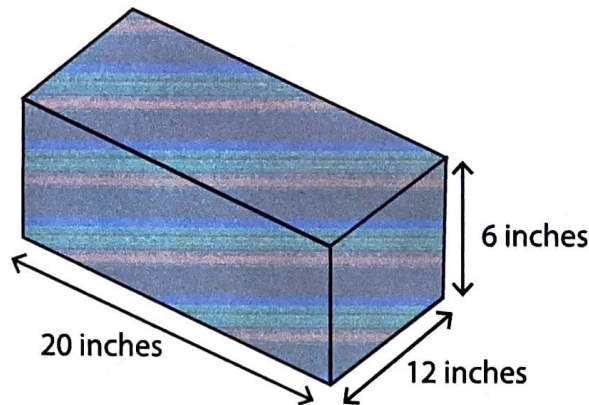
1 inch = 2.54cm

You need to calculate the surface area of the boxes **in cm** to find out how much paper you need to cover each box.

As you need to include additional paper for the flaps, you use the following formula to calculate the total amount of paper required per box:

$$S \times 0.5\pi = T$$

S = Total surface area

T = Total amount of paper required

$\pi = 3.14$

What is the total surface area of paper required per box? Give your answer in cm²

Show your working out and write the answer in the box below.   **(5 marks)**

20 × 2.54 = 50·8cm, 12×2.54= 30·48 cm , 6×2·54= 15·24cm.

(50·8 × 30·48 ×2) + (50·8×15·24 ×2) + (30·48×15·24 ×2) = 5574·1824 cm².

5574·1824 × 0·5 π = 8751·466368

Answer: _____8751_____ cm²

15

You also make candles which you sell on your online craft shop.

You sell candles for £6.75 each and photo frames for £8.99 each.

58% of the selling price is profit for each item.

Last month you sold 46 candles and 31 photo frames.

You estimate it takes 30 minutes to make each candle and 1.5 hours to make each photo frame.

Calculate how much profit you earn per hour.

Show your working out and write the answer in the box below. *(6 marks)*

$$(£6.75 \times 46) + (£8.99 \times 31) = £589.19 \quad (income)$$

$$£589.19 \times 0.58 = £341.73 \quad (profit).$$

$$(0.5 \times 46) + (1.5 \times 31) = 69.5 \quad (hours).$$

$$\frac{£341.73}{69.5 \, hrs} = £4.92 / hr.$$

Answer: £ __4.92__

16

These are your figures for selling candles and photo frames last year.

Month	Sales	Month	Sales
January	£212	July	£298
February	£194	August	£275
March	£245	September	£306
April	£302	October	£314
May	£275	November	£339
June	£242	December	£364

What is the percentage increase in your mean monthly profit from the first 6 months to the mean monthly profit from the second 6 months?

Show your working out and write the answer in the box below.   **(5 marks)**

£212 + £194 + £245 + £302 + £275 + £242 = £1470.

$\frac{£1470}{6}$ = £245   (first 6 months).

£298 + £275 + £306 + £314 + £339 + £364 = £1896.

$\frac{£1896}{6}$ = £316   (last 6 months).

$\frac{316 - 245}{245} \times 100 = 28.498 \%$.

Answer: ___28·98___ %

END OF ASSESSMENT