

# NUMERACY INTERMEDIATE REVISION BOOKLET 3

NOV 2019

Name: .....

Teacher: .....



# Questionnaire

F+I Maths Num 41 Nov 2016<sup>5</sup>

Examiner  
only

3. A survey was carried out to find how often teenagers buy DVDs.

The following two questions were asked in a questionnaire.

<p>Q1. <i>Where do you live?</i></p> <p>Q2. <i>How often do you buy DVDs?</i></p> <table><tr><td><i>Never</i></td><td><i>1-10 times</i></td><td><i>10-15 times</i></td><td><i>More than 15 times</i></td></tr><tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></table>	<i>Never</i>	<i>1-10 times</i>	<i>10-15 times</i>	<i>More than 15 times</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Never</i>	<i>1-10 times</i>	<i>10-15 times</i>	<i>More than 15 times</i>					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

(a) For each question give **one** reason why it is **not** suitable.

[2]

Q1. ....

.....

Q2. ....

.....

(b) The survey was carried out by leaving copies of the questionnaire on the DVD shelves in a supermarket.

Give **one** criticism of how the survey was carried out.

[1]

.....

.....

.....



05

3. Lloyd has carried out a survey in his school. He surveyed 300 pupils. Below is a section from his questionnaire.

1. Which year group are you in? .....
2. Do you like the colours of the school uniform? .....
3. What is your favourite colour? .....

(a) Afterwards, Lloyd thinks he should have given option boxes in questions 1 and 2. What could these option boxes be? [2]

Question 1:

.....

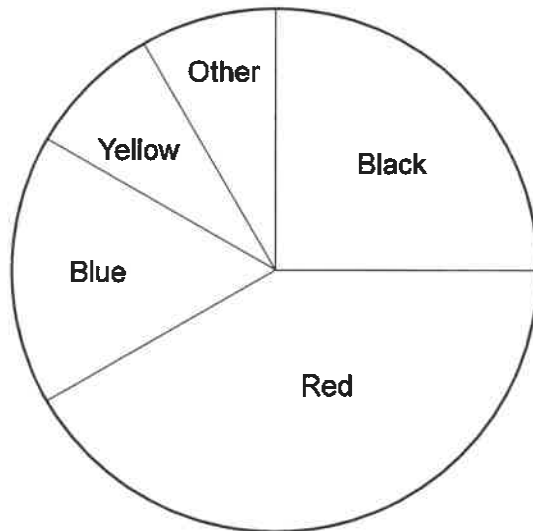
.....

Question 2:

.....

.....

(b) A pie chart displaying the results from question 3 of the questionnaire is shown below.



(i) Which colour was chosen by 75 pupils as their favourite colour? Circle your answer. [1]

- Black      Red      Blue      Yellow      Other



5. (a) A survey was carried out to find out how often people used the swimming pool in a sports centre.  
The following two questions were asked in a questionnaire.

Q1. How far away from the sports centre do you live?  
Q2. How often do you go swimming?

(i) Give **one** reason why question 1 is a useful question to ask. [1]

.....  
.....

(ii) Explain why the answers to question 2 might be difficult to analyse. [1]

.....  
.....

(iii) A person answers that they go swimming.  
Write a question that could be used to find out how long this person spends in the pool, on average, each time they go swimming.  
You must give groups for collecting the data. [2]

Question:  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....



# Money

F Num June 2018 U1 <sup>10</sup>

Examiner  
only

5. (a) *Cornell's* supermarket sells 1-litre cartons of orange juice at £1.80.

*Cornell's* supermarket has an offer of 'buy 2 get 1 free'.



*Larkman's* supermarket sells 2-litre bottles of orange juice at £2.20.



Janice needs to buy 6 litres of orange juice.

How much money would Janice save by buying the orange juice at *Larkman's* supermarket? [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



2.



Small bottle  
300 ml for 66p



Medium bottle  
400 ml for 92p



Large bottle  
500 ml for £1.25

(a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Roland is going to buy some orange juice for a party.  
Which size bottle of orange juice offers the best value for money?  
You must show your working.

[3 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(b) Galina needs to buy **exactly** 800 ml of orange juice.  
Which is the best option for Galina?  
You must show your working and consider all options.  
You must give a reason for your choice.

[3]

.....

.....

.....

.....



(ii) Explain why your answer in part (b)(i) is not the exact number of gallons Miss Price used. [1]

.....  
.....  
.....  
.....

3. Emrys, Layla and Rhys go shopping together for fruit. They buy pears and apples from a market stall.

Emrys buys 3 pears and 1 apple for £1.22.



Layla buys 3 apples for 78p.



Rhys buys 5 pears and 2 apples.



How much change will Rhys receive from £5 when paying for 5 pears and 2 apples? [6]

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

Change from £5 is £ .....

3310U401  
05



F+I Num Nov 2017 U1

Examiner  
only

2. Four different supermarkets have special offers on the price of lemons.



Supermarket	Special offer
Cost 4go	Lemons: usually 40p each Now on offer! Buy 3 for the price of 2
Edges Mart	A net of 4 lemons for 75p
Food Uno	A bag of 5 lemons for 76p
Greenway	Lemons: only 26p each

Aled needs 6 lemons to make lemon cakes for a birthday party.

(a) In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Aled only has time to go to one supermarket.

Calculate how much Aled would pay in each of the supermarkets.  
In which supermarket will he be able to get the lemons he needs for the least amount of money?

You must show all your working.

[5 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....





F+I Num NOV 5 2017 U1

Examiner only

Dotted lines for writing.

(b) Aled can use any left over lemons to make muffins.

Which supermarket gives the best value for money?  
Give a reason for your answer.

[1]

Dotted lines for writing.



05

© WJEC CBAC Ltd.

(3310U30-1)

84

Turn over.

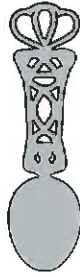
3310U301  
05

5. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Mike makes and sells three different designs of Welsh love spoons.



Small



Medium



Large

The table below shows Mike's sales figures for last September.

	Number sold	Selling price for each love spoon
Small	14	£8.25
Medium	9	£19.95
Large	5	£35.00

It cost Mike £225 to make all these love spoons.

What is Mike's profit from the sale of these love spoons?

You must show all your working.

[5 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



F Num June 2018<sup>9</sup> 42

Examiner  
only

Handwriting practice area with 18 horizontal dotted lines.

3310U201  
09



09

86

F Num Nov 2017<sup>3</sup> U2

Examiner only

1. (a) In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Evan wants to book a holiday in Cyprus for one week.  
He finds a holiday using the internet.



*Half board includes breakfast and evening meal.  
Full board includes breakfast, lunch and evening meal.*

**Hotel Amathas \* \* \* \***

£860 per adult for one week  
£500 per child for one week  
(HALF BOARD)

UPGRADES (for one week)

FULL BOARD extra £80 per adult, extra £55 per child  
Extra £115 for a room with a sea view.

DISCOUNT

10% discount for payment in full at the time of booking.

- Evan wants to book one room for two adults and one child.
- He wants an upgrade to full board for all three people.
- He wants a room with a sea view.

Evan pays in full when he books the holiday.  
Work out the total cost.  
You must show all your working.

[6 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

3310U201  
03



87

1.



Raspberries cost £3.60 per kg



Pears cost £2.60 per kg

Rhys buys some raspberries and some pears.  
Rhys weighs the fruit he buys.  
The raspberries cost him £4.50.

(a) Calculate the mass of the raspberries Rhys buys. [2]

.....  
.....

(b) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

He finds that the mass of the pears is three times the mass of the raspberries.  
How much change does Rhys get from £20 when buying the raspberries and pears?  
You must show all your working. [4 + 2 OCW]

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

3310U401  
03



4. Mrs Henry works part time in a factory. The amount of time for each day that she worked last week is shown in the table.

Day	Hours worked
Tuesday	$3\frac{1}{2}$
Wednesday	4
Thursday	$4\frac{1}{2}$
Friday	5
Saturday	3

Mrs Henry's pay is calculated using the following:

- Tuesday to Friday:
- £8 per hour for the first 15 hours
  - £9 per hour for any extra hours
- Saturday:
- double the usual rate of £8 per hour

- (a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Work out Mrs Henry's total pay for last week.  
You must show all your working.

[6 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



F Maths Num 11 June 2017<sup>9</sup>

Examiner  
only

.....

.....

.....

.....

.....

(b) On another week Mrs Henry was paid £188.

She puts 20% of her weekly wage into a savings account.

How much did Mrs Henry put into her savings account that week?  
Circle your answer.

[1]

£9.40

£18.80

£34.20

£37.60

£150.40

.....

.....

.....

.....

3310U101  
09



09

3. A conversion chart for oven temperatures is shown below.



Oven type	Electric oven			Gas oven
	Fan oven	Conventional oven		
Scale	Celsius	Celsius	Fahrenheit	Gas mark
Temperature	120°	140°	275°	1
	130°	150°	300°	2
	140°	160°	325°	3
	160°	180°	350°	4
	170°	190°	375°	5
	180°	200°	400°	6
	200°	220°	425°	7
	210°	230°	450°	8

(a) Dewi is making a cake using a gas oven.  
The recipe states:

'Preheat the oven to a temperature of 350° Fahrenheit'.

Use the conversion chart to find the gas mark Dewi should use.

[1]

Gas mark .....

(b) Ffion is cooking a cake using an electric oven.  
Her recipe states:

'Preheat the oven to gas mark 3'.

Ffion uses the conversion chart and correctly sets her oven to 140°.  
What type of electric oven does Ffion have?

[1]

(c) Dewi's cake needs 25 minutes to cook.  
Ffion's cake needs one and a half hours to cook.  
How many minutes longer does Ffion's cake take to cook than Dewi's cake?

[1]





6. Marcin has a market stall to sell his printed T-shirts.

It costs him:

- £250 to buy 100 plain T-shirts,
- 50p to print a design on each T-shirt.

Marcin sells his printed T-shirts for £4.00 each.

At the start of the week:

- His bank account balance is £820.
- Marcin has 100 printed T-shirts ready to sell.
- He has already paid for these printed T-shirts.

During the week:

- Marcin sells his stock of 100 T-shirts.
- He pays all the money he takes from selling T-shirts into his bank account.
- He buys and prints another 400 T-shirts.
- Marcin **does not** sell any of these 400 T-shirts.

How much will Marcin have in his bank account at the end of this week?

You must show all your working.

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



6. A department store employs *trainee* and *qualified* sales staff.

*Trainee* staff work less than 19 hours per week.

*Qualified* staff work 19 hours or more per week.

(a) A formula is used to calculate the week's wage for a *trainee*.

$$\text{Trainee staff wage} = \text{number of hours worked per week} \times \text{£}7.75$$

(i) Joe is a *trainee* who worked for 18 hours last week.

Calculate Joe's wage for last week. [1]

.....  
.....  
.....

(ii) A different formula is used to calculate the week's wage for *qualified* staff.

$$\text{Qualified staff wage} = \text{number of hours worked per week} \times \text{£}10.60 - \text{deductions}$$

Ryan is a *qualified* member of staff who worked for 23 hours last week.

His deductions for last week were £21.39.

Calculate Ryan's wage for last week. [2]

.....  
.....  
.....

(iii) How much more did Ryan earn than Joe last week? [1]

.....  
.....  
.....



(b) Ashton is a member of staff who works the same hours every week.

Day	Start time	Finish time
Mon	10 a.m.	3 p.m.
Wed	10 a.m.	3 p.m.
Fri	2 p.m.	6:30 p.m.
Sun	10 a.m.	3:30 p.m.

Use this information to decide if Ashton is a *trainee* or a *qualified* member of staff.

Put a tick in the correct box  
Give a reason for your answer.  
You must show all your working.

[2]

Trainee  Qualified

.....

.....

.....

.....

.....

(c) Elena is a manager at the department store who is paid £1760 every month.

She invests 8% of her monthly pay into a pension fund.

How much does she invest into her pension fund every month?

[2]

.....

.....

.....

.....



F+I Num June 2018 U2 <sup>4</sup>

Examiner  
only

2. Miss Price has received her total bill for water. It is based on estimates of how much fresh water is used and how much waste water is produced. Her bill is £58.80.

Miss Price's actual use of water was as follows:

- fresh water used  $25.25\text{ m}^3$ ,
- waste water produced  $22.31\text{ m}^3$ .

Fresh water used costs £1.08 per  $\text{m}^3$ .

Waste water produced costs £1.70 per  $\text{m}^3$ .

(a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

By how much has Miss Price been overcharged or undercharged?  
You must show all your working.

[4 + 2 OCW]

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

(b) (i)

Remember $1\text{ m}^3 \approx 220\text{ gallons}$
---

Use this conversion to calculate how much fresh water Miss Price used in gallons. [2]

.....  
.....  
.....

..... gallons





4. Ewan is going on holiday to India.  
He has saved £450 to exchange for Indian rupees.

(a) The exchange rate on the internet last week was £1 = 99.40 rupees.  
If Ewan had been going on holiday last week, how many rupees could he have bought? [2]

.....

.....

.....

(b) Ewan exchanges his money on arrival in India.  
The exchange rate is now £1 = 99.72 rupees.

The exchange bureau only has 500 rupee notes.  
Ewan wants to buy as many rupees as possible with his £450 savings.

How much of his £450 will Ewan spend buying rupees?  
Give your answer correct to the nearest penny.  
You must show all your working. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

3310U401  
07



6. *Truetool* is a tool hire company.



Hire charges	
The cost of hiring a cement mixer in £:	$13 \times \text{number of days} + 26$
The cost of hiring a jet washer in £:	$9 \times \text{number of days} + 38$

(a) Sara hires a cement mixer for 5 days and a jet washer for 7 days from *Truetool*. How much change would she get from £200?

[3]

.....

.....

.....

.....

.....

.....

.....

(b) Geraint hired a cement mixer for a number of days. Lois hired a jet washer for the same number of days. They each paid the same amount of money. For how many days did they each hire these tools from *Truetool*? You must show all your working.

[3]

.....

.....

.....

.....

Number of days .....



6. Grace sees a newspaper advertisement for *Blake's Mopeds*.

**Blake's Mopeds**

**Best deal!**  
Valid if you show this advertisement.



Moped £400



Helmet should be £80, we offer 15% off this price

Other costs payable are

- insurance £151.20,
- and
- vehicle tax £37.

Grace is planning to save for this offer.  
She also wants to save enough money for the first month's fuel.

The moped travels 20 miles on each litre of fuel.  
A litre of fuel costs £1.26.  
Grace estimates she will travel approximately 350 miles each month on her moped.

Starting this month, Grace will be able to save £60 per month.

After how many **complete** months will Grace have saved enough money for this offer, including the first month's fuel?

You must show all your working.

[6]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



F+I Num June 2018 42

11

Examiner  
only

A large rectangular area with horizontal dotted lines for writing.

3310U401  
11



11

© WJEC CBAC Ltd.

100  
(3310U40-1)

Turn over.

1. In October 2011, a charge of 5p for a carrier bag was introduced in Wales. Money raised from this charge is given to charity.



For the period 1st October 2011 to 31st January 2015, it was estimated that a total of between £16.8 million and £21.9 million was donated to charity. This is as a result of people buying 5p carrier bags.

- (a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Calculate an estimate of how much per month was given to charity between 1st October 2011 and 31st January 2015.

You must show all your working.

[4 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



I and H Num <sup>5</sup> June 2018 U2

Examiner  
only

(b) Over time, there has been a reduction in the use of 5p carrier bags. This is because more people are using their own bags.

What impact might this have had on the amount given to charity for the month of September 2014 when compared with September 2012? [1]

.....

.....

.....

.....

3310U601  
05



05

102

4. Megan Pugh's electricity bill is shown below. It covers the period May, June and July 2017.

Megan Pugh 203 Stryd Bryntor Maesgwyn			
Period	Previous meter reading	Present meter reading	Number of units of electricity used
May, June and July 2017	13450	13900	450
<b>Charge for electricity:</b> 450 units at 20p per unit		£90.00	
<b>Standing charge:</b> 3 months at £7.60 per month		£22.80	
<b>Total charges:</b>		£112.80	
<b>VAT at 5%:</b> 5% of £112.80		£5.64	
<b>Amount to pay: £112.80 + £5.64 = £118.44</b>			

- (a) On 1 August 2017, the charge per unit for electricity was increased by 5%. What is the increased cost per unit of electricity? Circle your answer.

[1]

20.5p                  21p                  21.5p                  22p                  22.5p

- (b) In this part of the question you will be assessed on the quality of your organisation, communication and accuracy in writing.

Megan wants to calculate her next 3-monthly electricity bill. She knows the following:

- Her meter reading on 31 October 2017 was 14400.
- The charge per unit for electricity has increased by 5% since her last bill.
- The standing charge has increased by 20p per month since her last bill.
- VAT remains at 5%.

On 31 October 2017, Megan had £470 in her bank account.

After paying her next 3-monthly electricity bill, will Megan be able to buy a new washing machine costing £330?

You must show all your working.

[9 + 2 OCW]



I+H Num Nov 2017<sup>11</sup> 41

Examiner  
only

A large rectangular area containing horizontal dotted lines for writing.

3310U501  
11



11

104

(b) In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Organics4U has 16 vehicles on the road every working day.  
The company has 6 vans and 10 trucks.

Ffion has the following information for each type of vehicle.

Type of vehicle	Average distance travelled per litre (km per litre)	Average distance travelled per day (km per day)
Van	8	256
Truck	5.5	704

The fuel used by all of the 16 vehicles costs £1.10 per litre.  
Use this information to calculate the total fuel bill for 1 working day.  
You must show all your working.

[6 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



(c) The currency widely used in Patagonia is the Argentine peso.

Alvaro sells alpaca fleeces from Patagonia.  
His fleeces are priced in Argentine pesos.  
Tom lives in Wales and buys fleeces from Alvaro.  
Tom pays for the fleeces in pounds.

Tom's purchases are shown in the table below.

	Number of fleeces bought	Price per fleece, in Argentine pesos	Exchange rate
January 2015	80	19.20	£1 = 15.47 Argentine pesos
March 2016	20	22.30	£1 = 15.21 Argentine pesos
April 2017	100	24.50	£1 = 14.93 Argentine pesos

For each of Tom's 3 purchases he paid correct to the nearest penny.

How much did Tom pay for these 200 fleeces, in pounds?

Give your answer correct to the nearest penny.

You must show all your working.

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Tom paid £ ..... , correct to the nearest penny



5. Hot water is often stored in cylinders.  
The water in the cylinder is heated for use in the shower.



A plumbing engineer wants to calculate how long a shower can be used continuously before the water runs cold. He uses the following formulae:

$$C = \frac{H(X - M)}{M - Y} \quad \text{and} \quad T = \frac{C + H}{F}$$

Where:

$C$  is the additional volume of water that feeds into the cylinder, in litres.

$H$  is the volume of hot water that the cylinder holds, in litres.

$M$  is the temperature of the water in the shower, in °C.

$X$  is the temperature of the hot water in the cylinder, in °C.

$Y$  is the temperature of the cold water that feeds into the cylinder, in °C.

$T$  is the time spent using the shower before the water runs cold, in minutes.

$F$  is the rate of flow of water in the shower, in litres per minute.

Daisy's cylinder holds 300 litres of hot water.

The temperature of the hot water in her cylinder is 60°C.

The temperature of the cold water that feeds into Daisy's cylinder is 8°C.

The water in Daisy's shower is set at a temperature of 32°C.

Her shower has a rate of flow of 26 litres per minute.





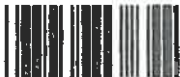
Use the formulae to calculate

- the additional volume of water that feeds into Daisy's cylinder, in litres,
- the number of minutes Daisy's shower will run continuously before the water runs cold.

[5]

Dotted lines for writing.

3310U601



5. Dafydd plans to hire a van.  
He can only hire the van for a **whole number of days**.  
The cost of hiring the van is given by the formula:

$$\text{hire cost} = \text{£}42 \times \text{number of days} + \text{booking fee}$$

- (a) Circle either TRUE or FALSE for each of the following statements.

[2]

When the booking fee is £18, the hire cost for 2 days is £102.	TRUE	FALSE
The hire cost is always greater than the booking fee.	TRUE	FALSE
When the van is hired for one extra day, the hire cost will be an extra £42.	TRUE	FALSE
The hire cost for 2 days is double the hire cost for 1 day.	TRUE	FALSE

.....

.....

.....

.....

- (b) Explain why the hire cost cannot be £124 when the booking fee is £18.  
You must show all your working.

[2]

.....

.....

.....

.....

.....

.....



2. (a) In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Edmund needs carrots to make soup.  
His two local supermarkets are *SuperM* and *FairMart*.

450 g of carrots cost 27p in *SuperM*.  
The same variety of carrots cost 57p per kg in *FairMart*.



Edmund wants to buy carrots that are the best value for money.  
Should he buy carrots from *SuperM* or from *FairMart*?  
Give a reason for your answer.  
You must show all your working.

[3 + 2 OCW]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



4.

### Ice skate hire charges

Hire any pair of ice skates for £3.25  
PLUS  
£2.40 for every hour or part of an hour hired\*



\*any minute or more into the next hour is charged as 1 hour

- (a) Bryn returns his hired ice skates after 3 hours 38 minutes.  
How much will the total charge be for hiring these ice skates?

[2]

.....  
.....  
.....  
.....  
.....

- (b) Beth pays £8.05 to hire ice skates.  
What is the minimum whole number of minutes that she could have hired the ice skates for before returning them?

[3]

.....  
.....  
.....  
.....  
.....  
.....  
.....

..... minutes



# Upper and Lower Bounds

I+H Maths Num 41 Nov 2016 <sup>16</sup>

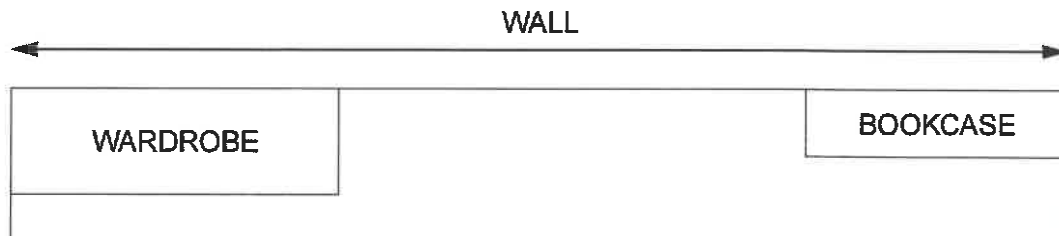
Examiner  
only

10.

<p><b>Stylish computer desk</b></p> <p><b>Made of laminate wood.</b></p> <p><b>Non-scratch top.</b></p> <p><b>Length is exactly 2000mm</b></p>	
--	--

Luc wants this new desk for his bedroom.

The desk is to fit on the straight wall between his wardrobe and his bookcase.



*Diagram not drawn to scale*

Luc has measured the length of

- the wall, which is 600 cm, correct to the nearest 10 cm,
- the bookcase, which is 147 cm, correct to the nearest 1 cm,
- the wardrobe, which is 250 cm, correct to the nearest 1 cm.

(a) What is the greatest possible length of the wall?  
Circle your answer.

[1]

600 cm      605 cm      645 cm      610 cm      650 cm

(b) What is the least possible length of the wardrobe?  
Circle your answer.

[1]

249 cm      249.45 cm      249.49 cm      249.5 cm      250 cm



(c) Can Luc be certain that this desk will fit in the space available?

You must

- show all your calculations,
- give the greatest or least bounds of any measurements used in calculations or comparisons,
- give a reason for your answer. [5]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



12. Michelle owns a café.  
She stacks coffee mugs as shown in the diagram below.

Michelle measures the height of each coffee mug as 12 cm, correct to the nearest centimetre.  
Each stacked coffee mug creates 4 cm extra height, correct to the nearest centimetre.

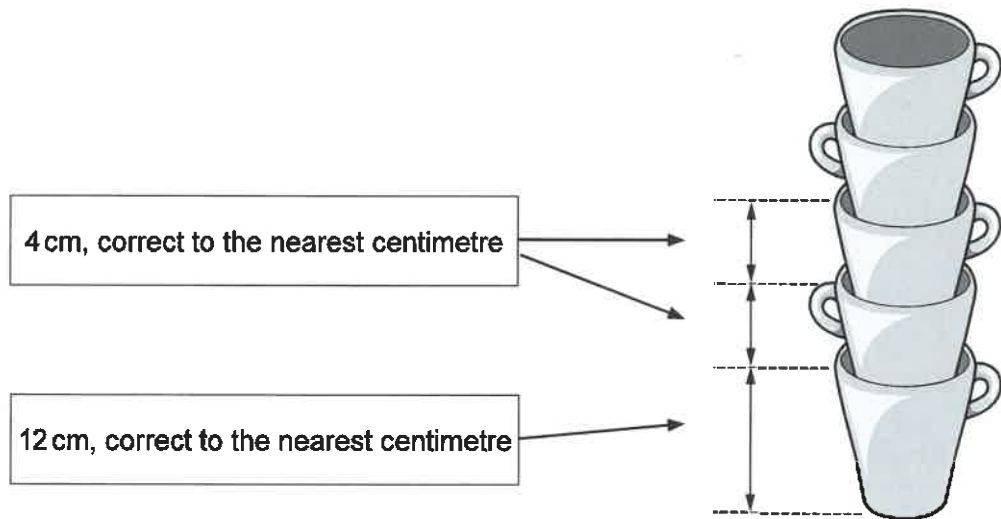


Diagram not drawn to scale

Michelle knows that the vertical height between two shelves is exactly 39 cm, as shown below.

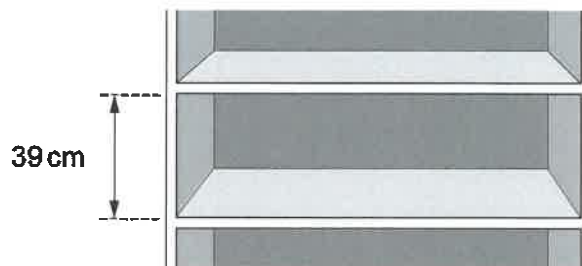


Diagram not drawn to scale



I and H Num June 2018 41

Examiner only

Can Michelle be certain that she will be able to place one stack of 7 coffee mugs between the two shelves?

Give a reason for your answer.

You must show all your working.

[5]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....





F Num Nov 2017 4 U 2

Examiner only

(b) Evan and his family will fly from Cardiff Airport to Larnaca International Airport in Cyprus.

	 Sun 5 Aug 2018
	Leave Cardiff 15:00 (UK time)
	Arrive Larnaca 22:00 (Cyprus time)
	Cyprus time is 2 hours ahead of UK time.

How long will this flight take?

[2]

.....

.....

.....

.....

.....

.....

..... hours



- (b) There were 71 532 supporters in the stadium watching the match. A newspaper headline writes this number of supporters correct to 2 significant figures. Which of the following numbers should appear in this headline? Circle your answer. [1]

72                  71 000                  71 400                  71 500                  72 000

- (c) The rugby pitch at the stadium is measured. On the diagram below, each measurement is given correct to the nearest 10 centimetres.

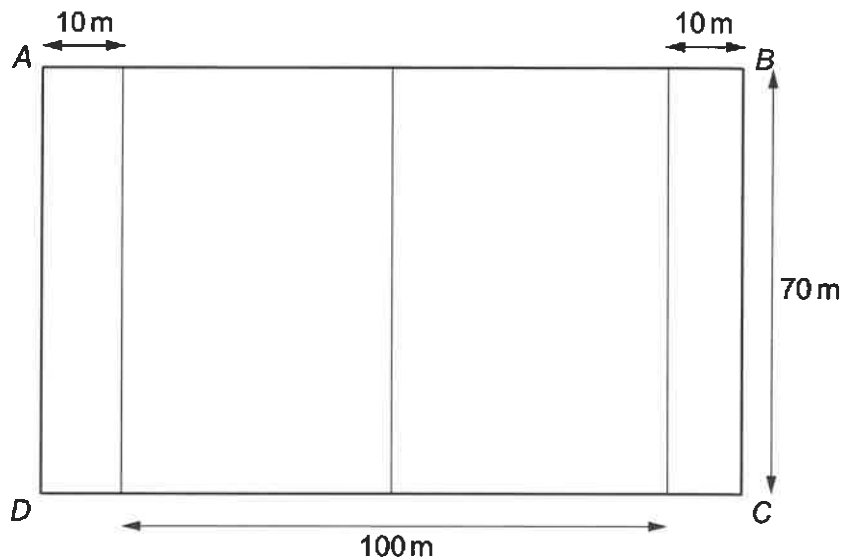


Diagram not drawn to scale

What is the least possible length of AB?  
Give your answer in metres.  
You must show all your working.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



# Pythagoras' Theorem and Trigonometry

I+H Num June 2018 42<sup>8</sup>

Examiner only

3. Yared is going to make a door wedge.

- (a) The cross-section of the wedge is shown below.  
The horizontal length is 12 cm and the vertical height is 3 cm.

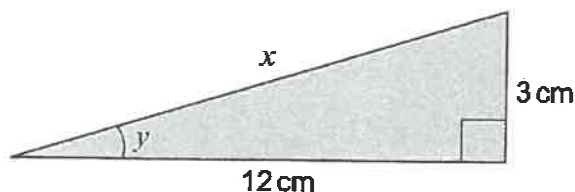


Diagram not drawn to scale

- (i) Calculate the length  $x$ .

Give your answer correct to 3 significant figures.

[4]

.....  
.....  
.....  
.....

$x =$  ..... cm

- (ii) The wedge must fit under Yared's door.  
The angle  $y$  must be less than  $15^\circ$ .  
Show that this wedge will fit under Yared's door.  
You must show all your working.

[3]

.....  
.....  
.....  
.....  
.....  
.....  
.....



I+H Num June 2018<sup>9</sup> U2

Examiner only

- (b) Yared decides to make a larger wedge that is mathematically **similar** to the one shown in part (a).  
This wedge is to have a vertical height of 4.5 cm.

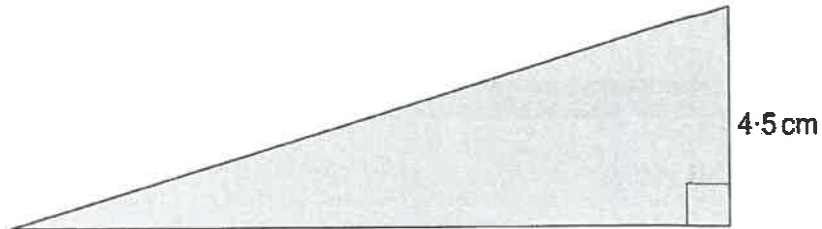


Diagram not drawn to scale

Calculate the horizontal length of this door wedge. [2]

.....

.....

.....

.....

.....

.....

.....

The wedge will be ..... cm long

3310U601



165

(b) The diagram shows the cross-section of one part of her run.

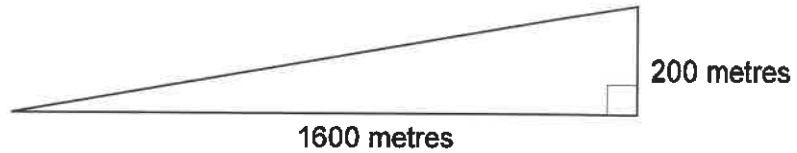


Diagram not drawn to scale

Calculate the angle of elevation of the road.

[3]

.....

.....

.....

(c)

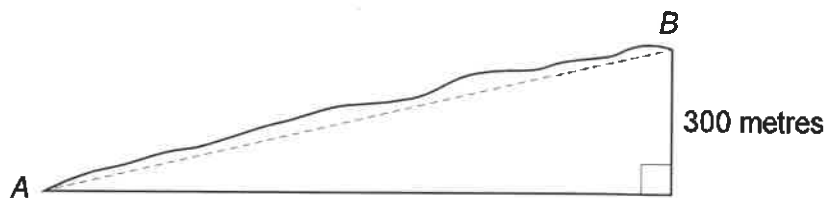


Diagram not drawn to scale

Gwenda runs on another section of uneven road from A to B. The rise in this section of the road is 300 metres. The angle of elevation of B from A is 10°.

(i) Calculate an estimate of how far Gwenda has run. State any assumption you have made.

[4]

.....

.....

.....

.....

Assumption: .....

.....

.....

(ii) What is the impact of your assumption on your answer?

[1]

.....

.....



8. The wire window guard shown below is to be made.



Diagram not drawn to scale

The length of the sides of each small wire square shown is 3.3 cm.

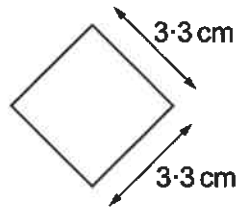


Diagram not drawn to scale

Linos considers the length of the diagonal of each small square.

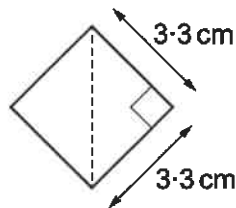


Diagram not drawn to scale

She says,

The height of the window guard is equal to 9.5 diagonals of the square.  
The width of the window guard is equal to 11 diagonals of the square.



- (a) Calculate the length of the diagonal of a small square.  
Give your answer correct to 1 decimal place.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- (b) Calculate the area of the window guard.  
You must show all your working.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



16. The diagram below shows where Levi wants to attach a string of lights to his house.



Levi wants to attach a single string of lights from B to A and then from A to C. The diagram below shows the measurements Levi has taken.

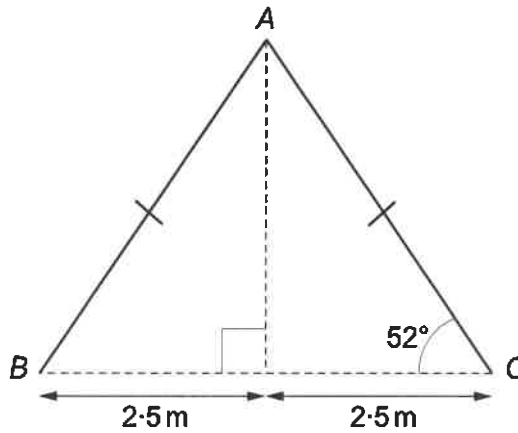


Diagram not drawn to scale

He spends £410 at the electrical store buying a string of lights. After putting up the lights, Levi finds he has 6 metres of the string of lights left over at one end.

How much did the electrical store charge Levi, per metre, for the string of lights? [6]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

169





I+H Maths Num 42 June 2017

25

Examiner  
only

Area with horizontal dotted lines for writing.

**END OF PAPER**



25

170

12.



Ursula is lying on her surfboard 180 metres away from the foot of a vertical cliff. The height of the cliff is 146 metres.

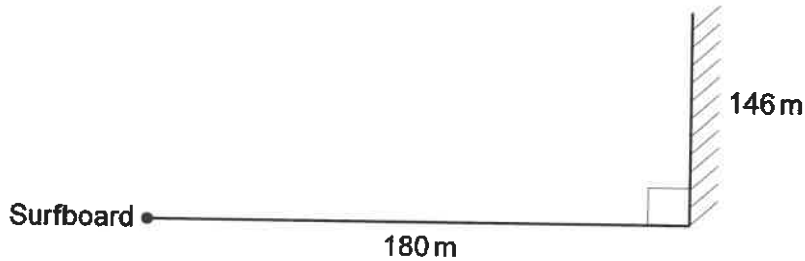


Diagram not drawn to scale

Ursula was told that if the angle of elevation of the top of the cliff from her lying position is between  $42^\circ$  and  $45^\circ$ , it is safe for her to attempt to stand on her surfboard.

Calculate the angle of elevation of the top of the cliff from Ursula's position lying on her surfboard.

State whether it is

- safe for Ursula to attempt to stand, or
- not safe as she is too near the cliff, or
- not safe as she is too far out at sea.

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



171

13. Marta buys a new television.

- (a) Marta wants to fit the television in a bookcase on the wall. In the shop she forgot to write down the length of the television. She did write down the height and the diagonal of the screen.

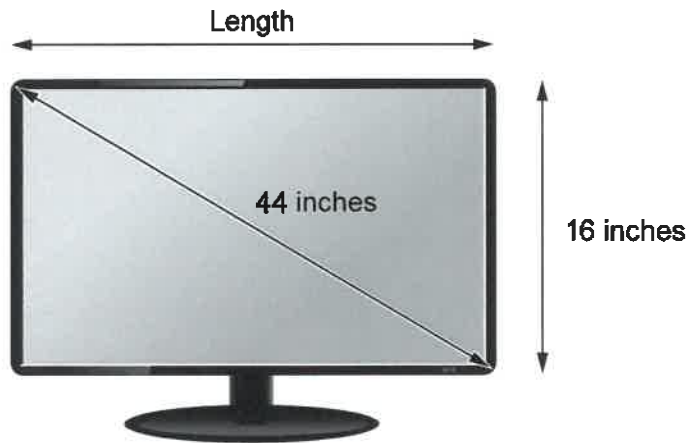


Diagram not drawn to scale

Marta needs to know the length of the screen before she opens the box, in case she wants to return the television.  
Calculate the length of the screen.  
Give your answer correct to 2 significant figures. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Length is ..... inches, correct to 2 significant figures.



- (b) The television was reduced in the sale by 26% of its original price.  
It cost Marta £710.40 in the sale.  
What was the original price of the television?

[2]

.....

.....

.....

.....

.....

Original price £ .....

- (c) A television uses 1 unit of electricity every 10 hours.  
A unit of electricity costs 9.8 p.

- (i) Calculate the cost of having a television turned on for 24 hours.  
Circle your answer.

[1]

£23.52                  £2.35                  40.83 p                  23.52 p                  2.45 p

.....

.....

.....

- (ii) On average, Marta watches 4 hours of television each day.  
On average, how much a week does it cost her to watch television?  
Circle your answer.

[1]

27.44 p                  £27.44                  £39.20                  39.2 p                  10.78 p

.....

.....

.....

173



4. Bethan has a plan of her rectangular lawn, which she has labelled  $ABCD$ . She wants to cut out a triangular flowerbed from her lawn, labelled  $GHD$ . Bethan decides that  $AG : GD$  should be  $1 : 2$  and that  $DH = HC$ .

She has made a sketch shown below.

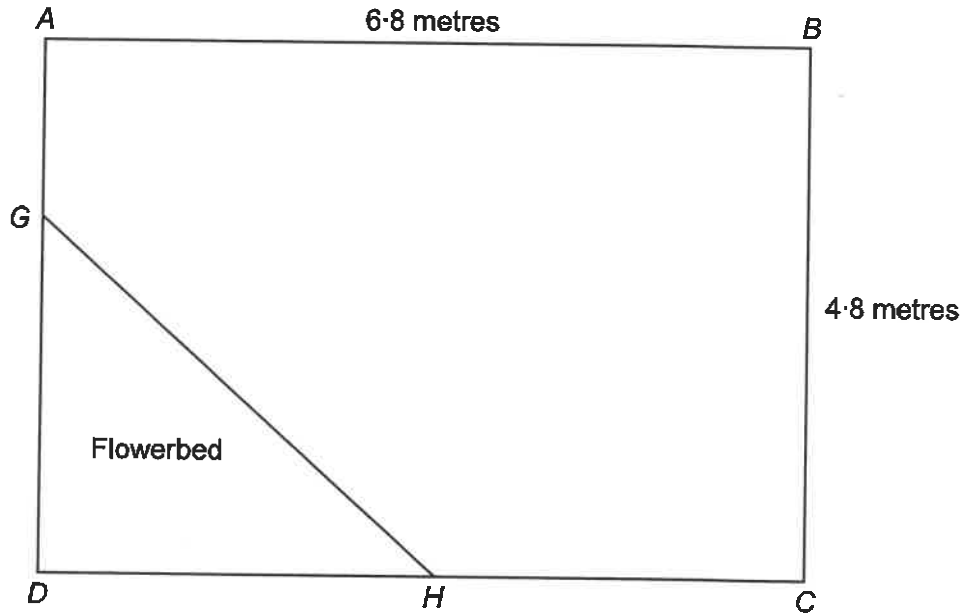


Diagram not drawn to scale

- (a) Calculate the length of  $GH$ .

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



(b) The flowerbed, *GHD*, is to have a flexible edging strip placed around its perimeter. The edging strip costs £3.50 per metre and can only be bought in strips of complete metres.

- How much will the edging strip cost Bethan?
- What length of strip will be left over?  
Give your answer in centimetres.

[4]

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

Cost £ .....  
..... cm left over

175



9. Mr Jakob notices a crack in a vertical wall which stands on horizontal ground.



(a) Mr Jakob fixes two temporary supports against the wall, as shown in the diagram below.

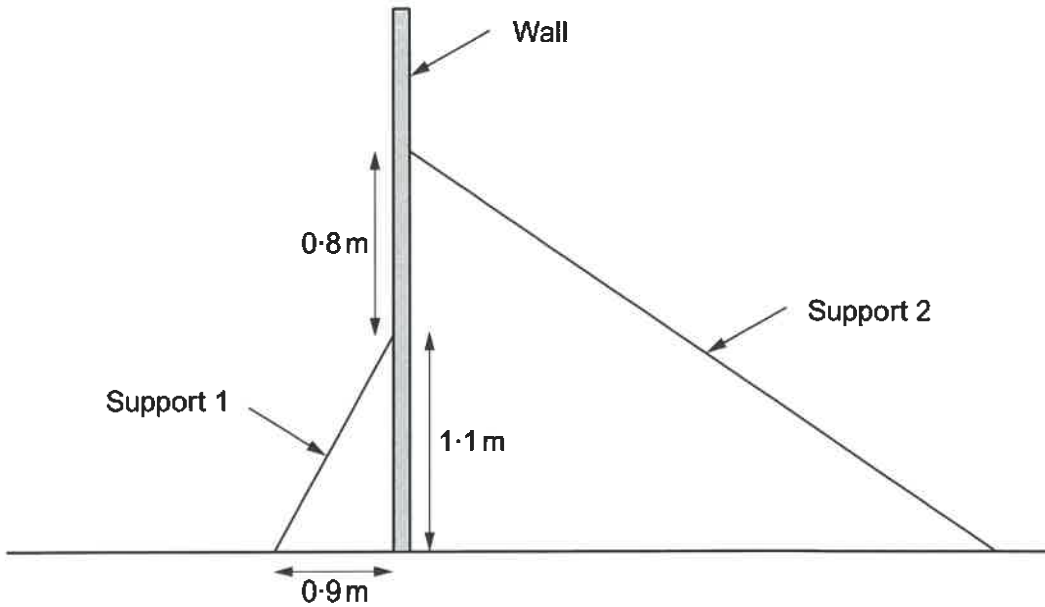


Diagram not drawn to scale

(i) Calculate the length of Support 1.

[3]

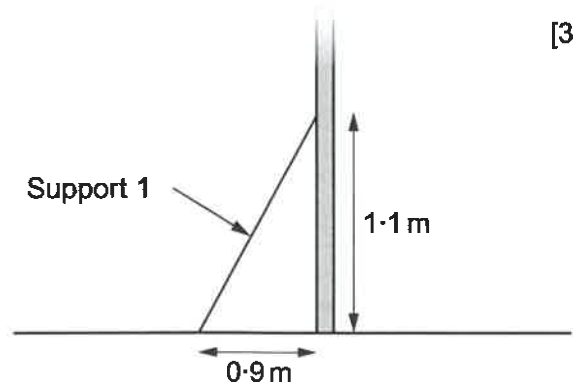


Diagram not drawn to scale

.....

.....

.....

.....

.....



- (ii) The length of Support 2 is 2.6 m.  
Calculate the angle between the horizontal ground and Support 2. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

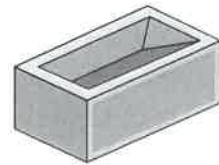
.....

.....

- (b) Mr Jakob gets a quote of £516 for rebuilding his wall.

The quote includes:

- 8 hours' labour costs at £22.50 per hour,
- a 20% discount off the cost of the bricks.



Calculate the cost of the bricks before the discount. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



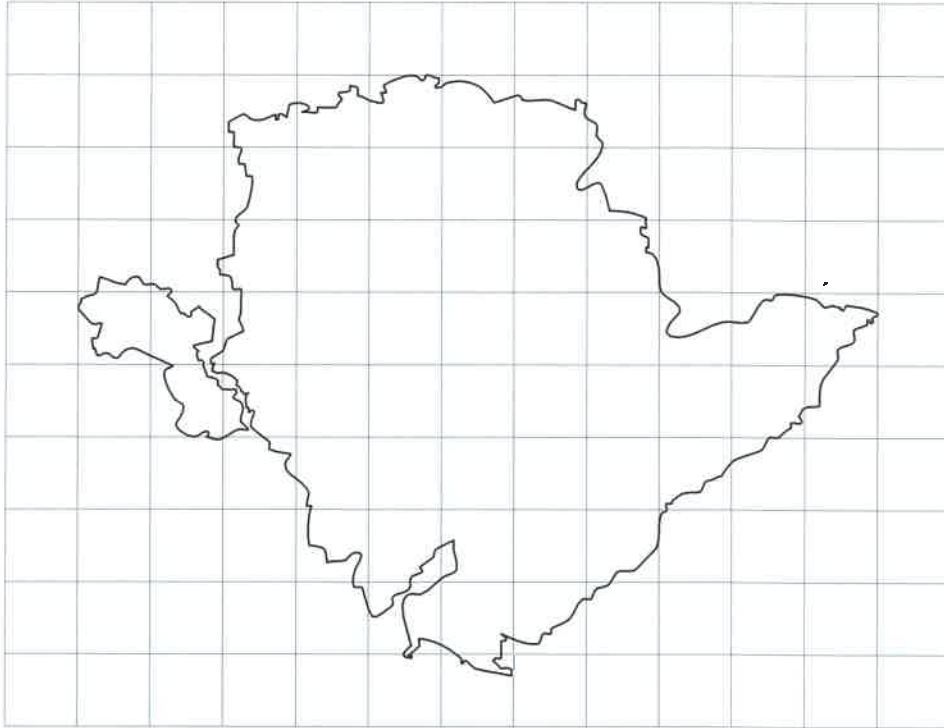


# Averages and Range

F Maths Num 1/2 Nov<sup>3</sup> 2016

Examiner  
only

1. (a) A map of Anglesey is drawn on the grid below.



Each square on the grid represents an area of  $16 \text{ km}^2$ .  
Find the approximate area of Anglesey in  $\text{km}^2$ .

[3]

.....  
.....

Area of Anglesey is .....  $\text{km}^2$ .

- (b) There is a coastal path around Anglesey.



*Diagram not drawn to scale*

Cennydd took 8 days to complete the walk around the coastal path.  
He recorded the number of miles that he walked on each of the 8 days.

20, 17, 10, 19, 15, 14, 13, 17

What is the median number of miles walked each day?

[2]

.....  
.....



03

1. Siân wrote the following:

'For the last 7 days I have recorded the number of cars parked in my local car park at 10 a.m. each day. This is what I found.

- The car park always had some cars parked in it.
- The greatest number of cars was 11.
- The range was 8 cars.
- The median was 9 cars.
- The mode was 10 cars.
- On one day, there were 6 cars in the car park.
- On another day, there were 7 cars in the car park.'

Gareth asked,

'What was the mean number of cars in the car park at 10 a.m. for these 7 days?'

Complete Siân's reply to Gareth's question.

You must list the 7 numbers Siân recorded and show all your working.

'The mean number of cars in the car park at 10 a.m. for these 7 days was

..... cars.'

[4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

3310U301  
03



- (b) Yesterday morning, Simon only managed to sample 10 people. He calculated the mean hand span of these 10 people to be 22.8 cm. Yesterday afternoon, Simon recorded the hand spans of a **further** 20 people. The results for these 20 people are shown in the frequency table below.

Hand span, to the nearest mm	Frequency
20.0 cm to 20.8 cm	2
20.9 cm to 21.7 cm	3
21.8 cm to 22.6 cm	10
22.7 cm to 23.5 cm	5

Calculate an estimate of the mean of all **30 hand spans** that Simon measured yesterday.

[6]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- (c) What could Simon do to improve his estimate of the mean hand span of people in Wales? [1]

.....

.....

.....

.....



6. Dr Khan and her daughter Faryl have different opinions about the mean temperature in their hallway.

Dr Khan and Faryl recorded the temperature in the hallway at 4 p.m. each day during the 30 days of April.



(a) In her note pad, Dr Khan summarised the temperatures in a grouped frequency table.

Unfortunately, Dr Khan has torn the page containing the table from her note pad and has lost some of the original data.

Temperature, $t$ ( $^{\circ}\text{C}$ )	Number of days
$20 \leq t < 21$	4
$21 \leq t < 22$	8
$22 \leq t < 23$	8
$23 \leq t < 24$	

Calculate an estimate of the mean temperature at 4 p.m. for these 30 days in Dr Khan's hallway. [5]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Estimate of the mean temperature at 4 p.m. for April in the hallway is .....  $^{\circ}\text{C}$



I+H Num June 2018 42

Examiner  
only

(b) What assumption have you made in calculating an estimate of the mean temperature at 4 p.m. for April in Dr Khan's hallway? [1]

.....

.....

.....

.....

(c) Faryl recorded the same temperatures as her mother at 4 p.m. each day during April. She found that the **actual** mean temperature in the hallway during April was **lower** than the correctly calculated estimate of the mean.

Explain how this can be true. [1]

.....

.....

.....

.....

.....



3. The tables below show all of the international football results for Wales in 1984 and 1985.

1984

28 Feb 1984	Scotland		2 – 1		Wales
2 May 1984	Wales		1 – 0		England
22 May 1984	Wales		1 – 1		Northern Ireland
6 Jun 1984	Norway		1 – 0		Wales
10 Jun 1984	Israel		0 – 0		Wales
12 Sep 1984	Iceland		1 – 0		Wales
17 Oct 1984	Spain		3 – 0		Wales
14 Nov 1984	Wales		2 – 1		Iceland

1985

26 Feb 1985	Wales		1 – 1		Norway
27 Mar 1985	Scotland		0 – 1		Wales
30 Apr 1985	Wales		3 – 0		Spain
5 Jun 1985	Norway		4 – 2		Wales
10 Sep 1985	Wales		1 – 1		Scotland
16 Oct 1985	Wales		0 – 3		Hungary

Geraint says,  
 'On average, the Wales international football team scored more goals per match in 1985 than in 1984.'

(a) In checking the truth of Geraint's statement, why would it not be helpful to consider the range of the number of goals scored per match in each year? [1]

.....

.....

.....



(b) (i) By considering the mean number of goals scored per match by Wales each year, is Geraint's statement true? You must show calculations for each year to support your answer. [3]

Dotted lines for calculations.

(ii) Give one reason why this method does not necessarily show that the Wales international football team results were better in 1985 than in 1984. [1]

Dotted lines for answer.

3310U301 07



3. Sam has a box with 30 coloured cards in it.  
He chooses one card from the box at random.

(a) There is an even chance that Sam chooses a red card.  
How many red cards are there in Sam's box? [1]

.....

(b) It is impossible for Sam to choose a yellow card.  
How many yellow cards are there in Sam's box? [1]

.....

(c) It is unlikely that Sam chooses a blue card.  
What is the smallest number of blue cards that Sam could have in his box? [1]

.....

4. (a) Write down the mode of these numbers. [1]

64 54 65 45 54 84 66 85

.....

.....

Mode = .....

(b) Write down the median of these numbers. [2]

16 13 20 25 18 22 17 27 24

.....

.....

Median = .....





I+H Num Nov 2017<sup>4</sup> 412

Examiner  
only

1. Alptai is a ski resort.  
The daily snowfall for January is given in the table below.

Daily snowfall, $s$ (cm)	Number of days
$0 \leq s < 5$	10
$5 \leq s < 10$	16
$10 \leq s < 20$	4
$20 \leq s < 30$	0
$30 \leq s < 50$	1

- (a) Calculate an estimate for the mean daily snowfall for the 31 days of January. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- (b) Circle either TRUE or FALSE for each of the following statements. [2]

The table above shows that there definitely was snowfall on each of the 31 days in January.	TRUE	FALSE
There were 16 days when the daily snowfall was less than 10 cm.	TRUE	FALSE
There was only 1 day with snowfall greater than or equal to 20 cm.	TRUE	FALSE
The modal group also contains the median daily snowfall.	TRUE	FALSE

.....

.....

.....



124

I+H Num Nov 2017<sup>5</sup> 42

Examiner  
only

- (c) For the 28 days of February, the mean daily snowfall in Alptai was 9 cm.  
On 1st February, the snowfall recorded in Alptai was 63 cm.  
Calculate the mean daily snowfall for the 27-day period 2nd to 28th February. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

3310U601  
05



05

125

(c) David and Gwyn kept a training record as they prepared for the charity event. They recorded the number of miles that they ran each day. The mileage for week one is shown below.

	Mon	Tue	Wed	Thur	Fri	Sat	Sun
David	1	8	2	1	7	1	5
Gwyn	1	4	1	6	2	1	12

Gwyn thinks that his average daily mileage is greater than David's. Explain why using the **medians** would not show this. You must show all your working.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



10. (a) *Kenworth Electrical* specialises in wiring new houses. The monthly wages of all *Kenworth Electrical* employees are summarised in the frequency table below.

Monthly wage, £ $x$	Frequency
$1800 \leq x < 2000$	64
$2000 \leq x < 2100$	50
$2100 \leq x < 2400$	2
$2400 \leq x < 5800$	0
$5800 \leq x < 7800$	4

(i) How many people does *Kenworth Electrical* employ? Circle your answer. [1]

- 5                      6                      50                      100                      120

(ii) In which group does the median monthly wage lie? Circle your answer. [1]

- $1800 \leq x < 2000$                        $2000 \leq x < 2100$                        $2100 \leq x < 2400$   
 $2400 \leq x < 5800$                        $5800 \leq x < 7800$

(iii) Alysia is an accountant working for *Kenworth Electrical*. She knows the exact wage of each employee. Alysia says,

It would be misleading to use the mean monthly wage as an average.

Explain why Alysia has reached this conclusion. [1]

.....

.....

.....

