Aberdare Community School

Mathematics Department

WJEC GCSE

Higher – Calculator

Shape

Metric and imperial units

Name: .....

Set: .....

Date: .....

Teacher: .....

Examiner only

1. A clothing catalogue gives the following sizing guide.

Size	Chest size in inches	Waist size in inches
S	34 to 36	27 to 29
M	37 to 38	30 to 31
L	39 to 42	32 to 35
XL	43 to 45	36 to 37

All measurements are given to the nearest inch (1 inch ≈ 2·54 cm)

(a) Lee has a $37\frac{3}{4}$ inch chest and a 28 inch waist. He is ordering a long coat from the catalogue. What size would you suggest that he orders? Give a clear reason for your answer.

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[1]

(b) Bill has a 84 cm waist. He is ordering trousers from the catalogue. Which size should he order? Show your working to support your answer.

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Size ..... [2]

(c) Complete the line in the table below which gives the same information for customers in centimetres. Write all measurements correct to the nearest whole number.

Size	To fit chest	To fit waist
XL	109 cm to 114 cm	..... cm to ..... cm

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[2]

Examiner only

2. Here is a recipe for spaghetti with a tomato and basil sauce to serve 4 people.

Ingredients to serve 4 people	
For the spaghetti	**For the sauce**
400 g/14 oz plain flour	4 tablespoons olive oil
4 eggs	2 onions
	800 g/28 oz fresh chopped tomatoes
	20 leaves of fresh basil

(a) Complete a version of this recipe to serve 10 people.

Ingredients to serve 10 people	
For the spaghetti	**For the sauce**
..... g/..... oz plain flour	..... tablespoons olive oil
..... eggs	..... onions
	..... g/..... oz fresh chopped tomatoes
	..... leaves of fresh basil

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[3]

(b) Use the information given in the recipe to complete this statement.

100 g is ..... oz

[1]

Examiner only

12. The Body Mass Indicator (BMI) is a formula that is sometimes used as an indicator of relative body fat.
A Belgian statistician developed the formula in the nineteenth century.

Imperial BMI Formula

$$BMI = \frac{W \times 703}{H^2}$$

W = weight in pounds
H = height in inches

1 foot = 12 inches
1 stone = 14 pounds

In America, the Department of Health have in the past used the BMI to give a Weight Status as follows:

BMI	Weight Status
Below 18.5	Underweight
18.5 to 24.9	Normal
25 to 29.9	Overweight
30 and above	Obese

(a) Joel is 5 foot 4 inches tall and weighs 12 stone 3 pounds.
Find Joel's Weight Status.
You **must** show **all** your calculations.

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Weight Status .....

[6]

Examiner only

(b) Construct a version of the BMI formula so that it is possible to use values for weights in stone (s) and pounds (p) and for heights in feet (f) and inches (i) without any prior calculations.

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[4]

Examiner only

8. The following two scales are given on a scale drawing of a house.

Represents 1 metre

Represents 1 yard

Use the above scales to convert 1 metre into yards. Give your answer correct to one decimal place.

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[3]

Examiner only

7. Cheryl and Ben planned a cycle ride using a 1 : 25 000 scale map.
The route they planned measured approximately 80 cm on the map.

(a) Calculate approximately how far they planned to cycle.
You must give your answer in km.

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[5]

(b) After the ride Cheryl's cycle-computer showed that she travelled 24 km.
What was this measurement on the map in centimetres?

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[3]

1.

Imperial units:	**Metric to Imperial units:**
1 stone = 14 pounds (14 lb) 1 pound (1 lb) = 16 ounces (16 oz)	1 kg is approximately 2.2 lb

Use the information given above to answer the following questions.

(a) Jack weighs 122 lb. Find how much Jack weighs in stones and pounds.

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..... stones ..... pounds

[3]

(b) Wayne weighs 10 stone 4 lb. Find how much Wayne weighs in kg.

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[4]

1. Kitchen cupboards and worktops are measured in mm.

(a) A worktop is 4500 mm long.
How much is this in metres?

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[1]

(b) A rectangular worktop measures 3200 mm long by 750 mm wide.
Calculate the area of the top surface of the worktop in m^2.

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[2]

(c) A kitchen cupboard is in the shape of a cuboid.
Its capacity is 405 000 000 mm^3.
Internally, the cupboard measures 600 mm wide and 750 mm deep.
Calculate the internal height of the cupboard in mm.

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[2]

Examiner only

4.

Ingredients to make
4 pancakes

55 g plain flour
1 egg
100 ml milk
37·5 ml water
25 g butter

Useful information, metric and imperial units:

4 ounces is approximately 110 g
25 ml of milk or water is approximately 1 fluid ounce

(a) Using the recipe shown above, calculate the quantity of plain flour needed to make 48 pancakes. **Give your answer in ounces.** [3]

(b) Jerry works in a school kitchen.
She uses the recipe information for pancakes shown above.
She has measured out the plain flour, milk and butter and placed them with the eggs in a large bowl.
Jerry measures out 150 fluid ounces of water to add to her other pancake ingredients in the bowl.
How many pancakes is Jerry making? [3]

Examiner only

1.

At the time when the pyramids were built, the Egyptians used different measures from those we use today.

It is believed that

1 pyramid inch = 1·0010846752 inches
1 pyramid cubit = 25 pyramid inches.

We also know that

1 inch = 2·54 cm.

Complete the following table. [4]

Measure	Equivalent to
1 pyramid cubit	..... inches, correct to 3 decimal places
1 pyramid inch	..... cm, correct to 4 significant figures

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