



## ALL IN ONE PLACE BASE CAMP MATHS EXTENDED RESPONSE ACTIVITY 2

### INSTRUCTIONS

- There is no time limit for this activity
- Show all working
- Answer the questions without using a calculator;
- Check your work using the solution sheet

## INTRODUCTION

*'Extended Response? What's this all about?'*

*'I guess we'll have to extend our responses!'*



## Yes and No ...

Extended Response activities help you to

- consolidate your knowledge and skills in Maths
- develop new Maths skills
- apply different ways of thinking to daily life problem solving
- understand the importance of Maths in the real world
- share your understanding of Maths with family, friends and teachers
- make sure that you ace any Maths question at school or for 11+



**JUMP 1**

Mark has half as much money as Matt. Matt has 60% of the amount of money that Myron has. Myron has £90.

a. How much money does Mark have? Include units in your answer.

**ANSWER** \_\_\_\_\_

b. Mark wants to buy a game console costing £300. He gets £5 pocket money a week, and earns £35 each month mowing lawns.

Including the money he started with, how long will he need to save so he can buy the game console?

**ANSWER** \_\_\_\_\_



c. One assumption in the previous question is that Mark doesn't spend anything! What other assumption should you make to answer the question? Explain your reasoning.

**ANSWER**

---

---

---



## JUMP 2

You and your family are on holiday in California. One night your family decides to order a giant pizza for delivery. In the USA, sales tax or VAT is not included in the advertised price. Also, people expect a tip.



- the giant pizza costs \$30
- California sales tax is 4.9%
- You plan to give a 12% tip

a. Estimate the sales tax and include units in your answer.

**ANSWER** \_\_\_\_\_

b. Estimate the tip you plan to give and include units in your answer.

**ANSWER** \_\_\_\_\_

c. Estimate the total cost of the order. Is your estimation high or low? Explain your reasoning.

**ANSWER**

---

---

---

d. Determine the extra cost of the order. How close was your estimate?

**ANSWER** \_\_\_\_\_



## JUMP 3

a. Correct the error in writing a proportion to find the cost  $x$  of 30 pencils if 12 pencils cost £2.00 Hint: you may need to swap the numerators and denominators.

$$12/2.00 = x/30$$

**ANSWER** \_\_\_\_\_

b. Your school buys pens and pencils. The proportion of pens bought, is 1 in every 8.

What is the ratio of pencils to pens bought in the simplest form?

**ANSWER** \_\_\_\_\_

c. If your school buys 56 pencils, how many pens are bought?

**ANSWER** \_\_\_\_\_

d. Pens cost 20p more than pencils.

What is the total cost of buying pencils and pens if the ratio of pencils to pens bought is 8:1 and your school buys 50 pens?

**ANSWER** \_\_\_\_\_





**JUMP 5**

Some letters of the alphabet have rotational symmetry and lines of symmetrical reflection.

a. What is the order of rotational symmetry of the letter on the right?

**ANSWER** \_\_\_\_\_

b. What is the angle of rotation of the letter?

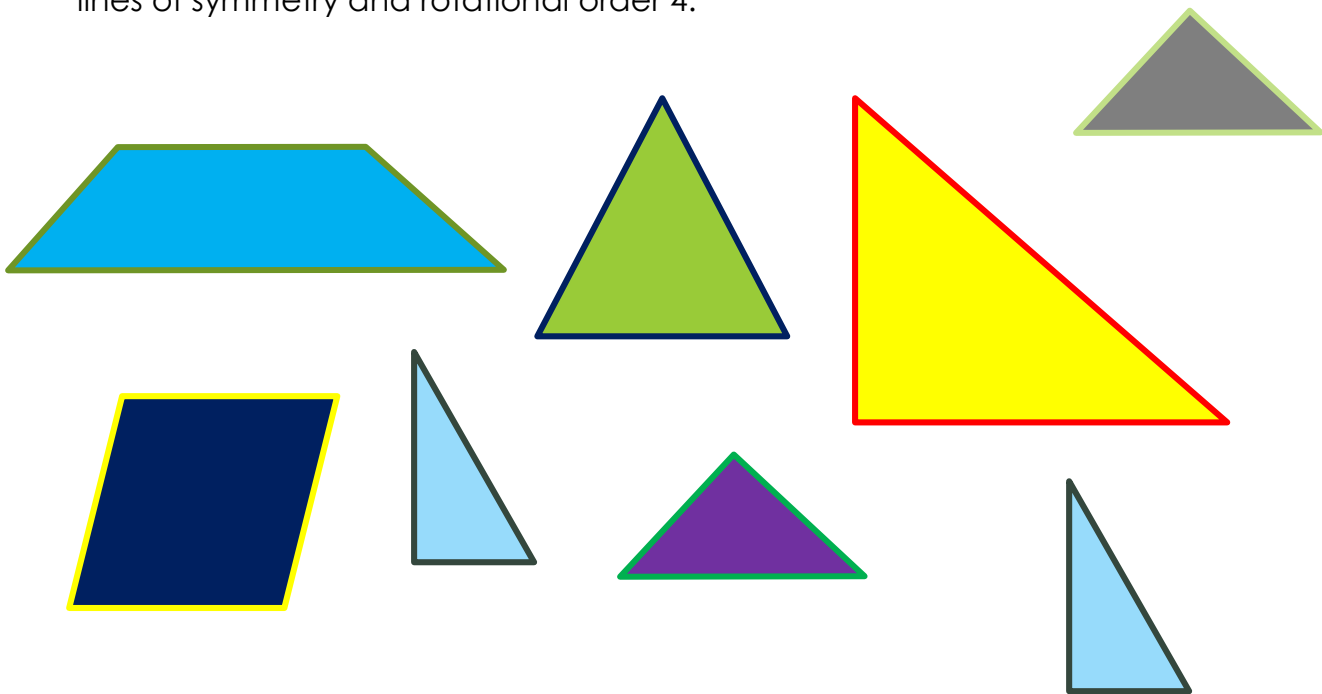
**ANSWER** \_\_\_\_\_

c. How many lines of reflection does the letter have?

**ANSWER** \_\_\_\_\_



d. Cut out these shapes. Use some of the shapes to make one shape having 4 lines of symmetry and rotational order 4.





**JUMP 8**

You and a friend carry out a survey to find out which TV programmes are popular with students at your school.

The results of your survey are shown in the table.



TV programme	Number of students
The Big Band Theory	16
The Fosters	12
The Clangers	22
Thunderpants	14
BBC News	6
Star Wars Rebels	10

a. In your workbook, draw a bar graph or histogram accurately showing the results of your survey. Remember to label the axes and to give your graph a title.

**ANSWER** \_\_\_\_\_

b. Which programme is liked by more than 25% of the students you surveyed?

**ANSWER** \_\_\_\_\_

c. There are 400 students in your school. What fraction of students did not take part in your survey? Express the fraction in the simplest form.

**ANSWER** \_\_\_\_\_

d. Each episode of 'The Big Bang Theory' lasts 30 minutes. Each episode of 'The Fosters' lasts 42 minutes. How much more time do students spend watching 'The Fosters'? Include units in your answer.

**ANSWER** \_\_\_\_\_

e. Write one factor that would make it difficult for you to survey all the students in your school.

**ANSWER** \_\_\_\_\_



## JUMP 10

£200 is divided between Max, Imran, Zoe and Brad as follows:

- Max gets 30% of the money
- £100 is shared equally between Imran and Zoe
- Brad gets the rest of the money



a. Write, a ratio, in its simplest form, showing how the money is divided between the children. Your ratio should be in increasing number order.

**ANSWER** \_\_\_\_\_

b. In your workbook, draw a labelled pie chart showing how the money is distributed between the 4 children.

c. Brad spends all his money and need a £20 loan. Max and Zoe lend him £10 each.

Write, a ratio, in its simplest form, showing how the money is divided between the children. Your ratio should be in decreasing number order.

**ANSWER** \_\_\_\_\_

d. By how much has the total amount of money decreased? Express your answer as a decimal to one place.

**ANSWER** \_\_\_\_\_



**JUMP 11**

a. Calculate the volume of the solid on the right. Include units in your answer.

**ANSWER** \_\_\_\_\_

b. Calculate the surface area of the shape. Include units in your answer.

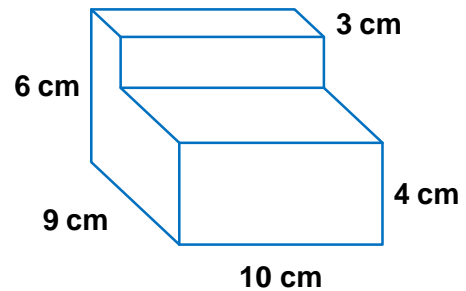
**ANSWER** \_\_\_\_\_

c. To make the shape into a cuboid, another cuboid has to be added. What is the volume of the cuboid that must be added? Include units in your answer.

**ANSWER** \_\_\_\_\_

d. How many cubes with a length of 3 cm would fit into the cuboid with dimensions 6 cm x 9 cm x 10 cm?

**ANSWER** \_\_\_\_\_







e. Two of the solids are joined to form a single solid. What is the volume of the solid?

**ANSWER** \_\_\_\_\_

f. Write the dimensions of the two identical faces that must join so that the new solid formed has a maximum surface area.

**ANSWER** \_\_\_\_\_



## JUMP 12

You and your family are going on holiday to Vienna in Austria, and Budapest in Hungary.

You change £500 into euros (EUR) and £400 into Hungarian Forint (HUF).

The exchange rates are

- 1 GBP = 1.25 EUR
- 1 GBP = 320 HUF



a. How many euros do you take with you to Austria?

**ANSWER** \_\_\_\_\_

b. You spend 80% of your euros in Vienna? How many euros do you have left?

**ANSWER** \_\_\_\_\_

c. When you arrive in Budapest, you discover that Hungary has joined the Eurozone. Countries that are part of the Eurozone only use euros.

You have to have all your money in euros using the current exchange rate:

- 1 HUF = 0.003 EUR

How many euros do you have to spend in Budapest, including the money left over from your trip to Austria? You can use a calculator.

**ANSWER** \_\_\_\_\_



## JUMP 13

Zac enjoys Maths and asks his teacher if he can give his class a lesson on the order of operations. She gladly says, 'Yes', pleased that he students want to share their Maths knowledge.

Zac writes two examples of using the order of operations on the board and asks the class which example is correct.



### EXAMPLE 1

$$4 \times 5 - 3 = 8$$

### EXAMPLE 2

$$4 \times (5 - 3) = 8$$



a. Which example is correct? Explain your reasoning.

**ANSWER**

---

---

---

---

b. Find the correct answer to the incorrect example.

**ANSWER** \_\_\_\_\_

Zac writes another two examples on the board. He asks the class to decide if calculations give the same answer.

**EXAMPLE 3**

$$4^2 \div 2 \times 8 - 4$$

**EXAMPLE 4**

$$4^2 \times 2 \div 8 + (12 - 2) \times 4$$

c. Do **EXAMPLE 3** and **EXAMPLE 4** have the same answer? Explain your answer.

**ANSWER**

---

---

---

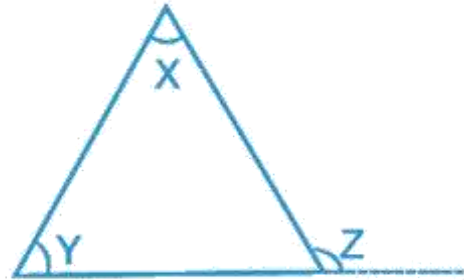


## JUMP 14

a. Label the exterior angle in the diagram on the right.

b. If the triangle is equilateral, calculate the value of **Z** in degrees.

**ANSWER** \_\_\_\_\_



c. If the triangle is isosceles, and  $X = Y$  can you calculate the value of angle **Z**? Explain your reasoning.

**ANSWER** \_\_\_\_\_



## JUMP 17

You chose a random number between 1 and 20

a. What is the probability of choosing an odd number? Express your answer in the simplest form.

**ANSWER** \_\_\_\_\_

b. What is the probability of choosing a multiple of 3? Express your answer in the simplest form.

**ANSWER** \_\_\_\_\_

c. What is the probability of choosing a factor of 12? Express your answer in the simplest form.

**ANSWER** \_\_\_\_\_



f. On the probability line below, mark an **X** showing the probability of choosing a prime number.



impossible

unlikely

even

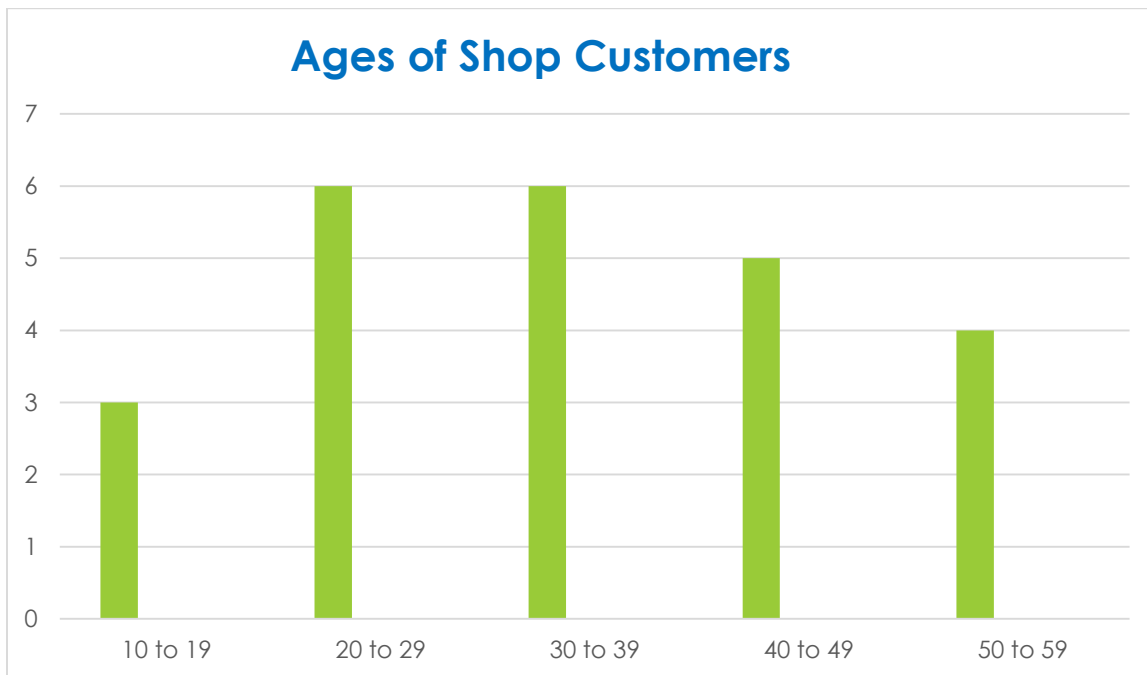
likely

certain



### JUMP 18

The graph shows the ages of customers that went into a shop from 08:00 to 09:00



a. Label the axes of the graph.

b. How many people went into the shop in 1 hour?

**ANSWER** \_\_\_\_\_



c. What proportion of the customers are teenagers?

**ANSWER** \_\_\_\_\_

d. The shop owner expects 300 customers per day. If the shop is open from 08:00 to 18:00, what is the average number of customer expected per hour after 09:00? Write your answer to the nearest whole number.

**ANSWER** \_\_\_\_\_



## JUMP 20

Time for you to have some fun testing your family and friends.

Look at the two pictures.

Choose the picture you like the most and make up any kind of problem on one of these topics:

- fractions, decimals and percentage
- ratio and proportion
- graphs
- shapes and angles
- perimeter, area and volume
- scale drawings
- estimation and units of measurement



PICTURE 1



PICTURE 2

When you have made up your problem, test a few people – maybe even your teachers. Make sure you can explain the answers to everybody.

Afterwards, think about

- was my problem too easy or difficult
- did I apply my Maths skills well and concepts I learned in this worksheet
- did people enjoy working through my problem – how do I know this?
- how could I improve the question next time



Cut and paste the **CHECK POINT** into your workbook.



**CHECK POINT EXTENDED RESPONSE ACTIVITY 2**

How much have you Jumped Ahead applying your Maths knowledge and skills? Write a number from 1 to 10 – 10 is 100% leap! Be honest – if the work was challenging, it's fine to say so.

I've jumped \_\_\_\_\_

Write a Maths topic from this worksheet you are good at and a topic you think needs improvement.

I'm good at \_\_\_\_\_

I need to work on \_\_\_\_\_

**LEARNING OUTCOMES**

Write your name in the table and ask a parent, teacher or tutor to decide **YES** or **NO** for each learning outcome or success criterion.

<b>My name is _____ and I can</b>	
<i>solve money problems involving percentage.</i>	<b>YES</b> or <b>NO</b>
<i>calculate ratio and proportion and probability.</i>	<b>YES</b> or <b>NO</b>
<i>solve simple algebraic expressions.</i>	<b>YES</b> or <b>NO</b>
<i>explain rotational order and lines of symmetry.</i>	<b>YES</b> or <b>NO</b>
<i>use scale diagrams to calculate quantities.</i>	<b>YES</b> or <b>NO</b>
<i>calculate area and volume of irregular shapes.</i>	<b>YES</b> or <b>NO</b>