



Maths Home Learning Task

Year 9

Higher 2

Name

Tutor Group

Teacher

Given out:

Monday 9 December

Hand in:

Monday 16 December

Parent/Carer Comment

Staff Comment

ATL

Target

Reading Task

Money and Measurement - Babylonian Mathematics

Mesopotamia, which means "The Land between the Two Rivers," was located one thousand miles east of the delta of the Nile River in between the Tigris and Euphrates Rivers. The Babylonian civilization flourished at about the same time as the Egyptian civilization. The Babylonians lived in a large desert, and they had a legal system, a postal system, and irrigation systems. The environmental differences between Mesopotamia and Egypt led the Babylonians to develop different areas in mathematics.

Mesopotamia engaged in a great deal of foreign trade because they had no wood or metal in their environment. They were constantly travelling in caravans of donkeys or camels, or on ships. Merchants travelled far to obtain goods. They went west to Lebanon for wood, north into Asia for precious metals, and east into India for silks and spices. These merchants needed a precise way of measuring things because these goods were rare and expensive.

The merchants developed scales and standard weights to replace the previous system of measuring things by donkey load. Heavy items were weighed in talents, and a talent was approximately 35 pounds. Precious things, like spices, were weighed in shekels, and a shekel was a little less than one third of an ounce. All of this trade and commerce also led to the development of money for the first time.

Almost all ancient peoples accepted barley as payment for goods because it was something everyone needed. Most workers received their pay checks in barley, and they used it to make their beer and their bread. They used whatever was left for trading. Babylonian merchants found that it was cumbersome to travel with camels and donkeys weighed down with barley, so they began to use silver as a way to pay for goods. They carried small amounts of silver with them and weighed it out whenever they wanted to buy something. They eventually made silver bars with the weight stamped on them, which was the world's first money. Silver was easy to carry and it never went bad!

Even though the Babylonians discovered a way to make trading easier by inventing money, they still had an inefficient accounting system. They used soft, clay tablets and wrote with pointed sticks in wedge-shaped symbols called cuneiform. Many symbols looked alike, so it was difficult to read. Their system of numbers had a base of 60, like the Sumerians, and they did not have a symbol for zero. In spite of a clumsy system, the Babylonians kept track of bills, receipts, and contracts. They even had tables to help them with their calculations. Archaeologists discovered thousands of clay tablets from a temple library near the banks of the Euphrates River that show tables of multiplication, addition, and the squares of numbers.



Babylonians often had just sun-baked bricks for building. They discovered that if they made two piles of bricks and joined them with a wedge-shaped brick in the centre, the wedge-shaped brick acted as a force to hold up the entire structure. This central brick was called the keystone in the arch. By building interlocking arches, the Babylonians then invented the dome. The arch and the dome became significant in all Near Eastern architecture, and became the basis for the aqueducts, bridges, and domes of the Roman Empire centuries later

Statistical measures

- 1 The table shows the number of cars each household has on a road of 50 houses.

Number of cars	Number of households
0	4
1	13
2	18
3	9
4	6

For the data, work out:

- the mean
 - the modal number of cars
 - the percentage of households that have one car.
- 2 The table shows the number of telephones in houses on an estate.

Number of telephones	0	1	2	3	4
Number of houses	2	16	21	6	a

- What is the total number of houses?
- Show that the number of telephones is $76 + 4a$.
- The mean number of telephones per house is 2. What is the value of a ?

Organising data

- 1** 200 people were interviewed. They travelled either by train or by bus.
70 out of the 90 people who travelled by train, travelled 30 miles or more.

Of the 110 who travelled by bus, $\frac{3}{5}$ travelled fewer than 30 miles.

Complete the two-way table.

	Train	Bus
Less than 30 miles		
30 miles or more		

- 2** Name the data collection method in each of these cases.
- a** Jack goes round a housing estate asking people their views on their local refuse collection.
 - b** Lisa counts the number of cyclists passing a checkpoint each minute during a cycle race.
 - c** Vikram answers some questions received online about the products he uses.
 - d** The checkout in a supermarket electronically records which goods are sold and how many.
 - e** Asmat records the temperature of a beaker of water at regular intervals during her science lesson.
 - f** At an amateur theatre production, a sheet of questions was placed on each chair for the members of the audience to complete and hand in at the end.
 - g** Sophie received a form to fill in from the tax office which she had to complete and post back.
 - h** Ben walked round the school car park noting down the make of each of the cars.

Scatter graphs

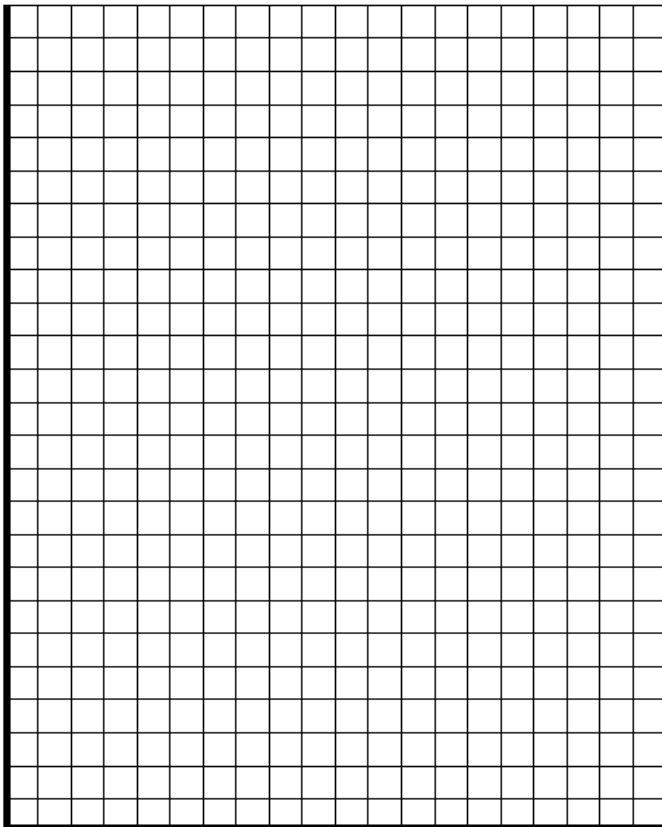
1 The table shows the amount of money earned by 10 students in a month and the amount each one spent on mobile phone calls.

Student	A	B	C	D	E	F	G	H	I	J
Money earned (£)	140	20	100	70	40	120	30	80	50	60
Money spent on mobile calls (£)	20	3	15	10	5	19	6	13	8	9

- a Use the information to draw a scatter graph and a line of best fit.

- b Use the line of best fit to estimate the amount spent on mobile phone calls by a student who earned £110.

- c Explain why it would not be sensible to use the line of best fit to estimate the amount spent on mobile phone calls by a student who earned £400.



Response to:

b.

c.

Sequences

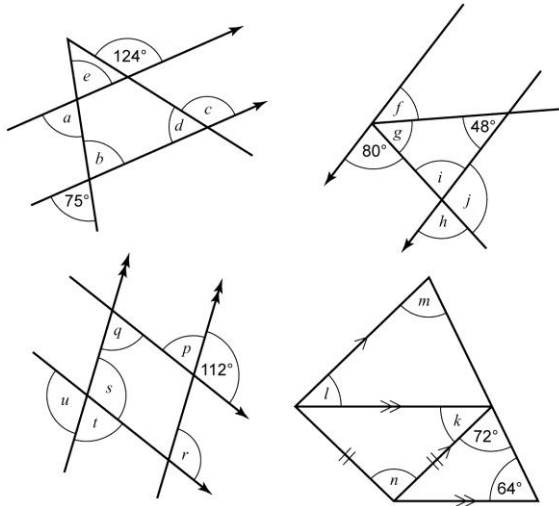
- 1** Write down the term-to-term rule for the following sequences:
- a** 2, 9, 16, 23, ...
 - b** 10, 13, 16, 19, ...
 - c** -4, 1, 6, 11, ...
 - d** 25, 19, 13, 7, ...
 - e** 0.2, 0.5, 0.8, 1.1, ...
- 2** Write down the first 5 terms of the sequence whose n th term is:
- | | | | |
|------------------|-------------------|---------------------|--------------------|
| a $n + 8$ | b $4n - 7$ | c $-5n + 10$ | d $n^2 - 4$ |
| a. | b. | c. | |
- 3** Write down the first 5 terms of the sequence whose n th term is:
- | | | |
|---------------------|----------------------|----------------------|
| a $n^2 + 10$ | b $(n + 5)/2$ | c $100 - n^2$ |
| a. | b. | c. |
- 4** Write down the n th term in the following sequences:
- | | |
|----------------------------------|-----------|
| a 2, 9, 16, 23, ... | a. |
| b 10, 13, 16, 19, ... | b. |
| c -4, 1, 6, 11, ... | c. |
| d 25, 19, 13, 7, ... | d. |
| e 0.2, 0.5, 0.8, 1.1, ... | e. |
- 5** Find the n th term of this linear sequence:

The third term is 10 and the eighth term is 30

Angles and Area

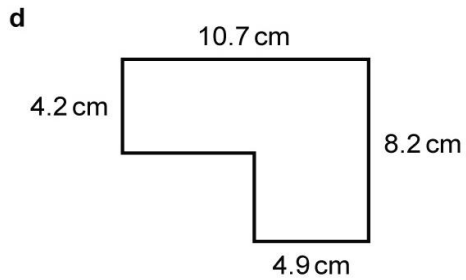
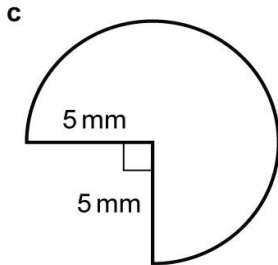
Angles and Area

1 Work out the values of the angles marked with letters.



- | | | |
|-----|-----|-----|
| a = | g = | m = |
| b = | h = | n = |
| c = | i = | p = |
| d = | j = | q = |
| e = | k = | r = |
| f = | l = | s = |
| | | u = |

2 Find the area of each of these shapes. Give each answer to one decimal place.



3 A rectangle has an area of 20 cm^2 . Its length and width are enlarged by a scale factor 3. Find the area of the enlarged rectangle.