

Core Maths Transition Work 2024 - due 02/09/2024

Question 1 - ( 2 marks available )

a) Find the value of  $4x - 6y$  when  $x = 3$  and  $y = -2$



b) Find the value of  $2a^2 + 5b^2$  when  $a = -6$  and  $b = 2$

Question 3 - ( 2 marks available )

$$s = ut + \frac{1}{2} at^2$$

$$u = 10 \quad a = -2 \quad t = \frac{1}{2}$$

Work out the value of  $s$ .



Question 2 - ( 2 marks available )

The formula for the cost of buying a car is:  
**cost** =  $12 \times$  **monthly payment** + **deposit**



a) Find the **cost** of a car when the **monthly payment** is £350 and the **deposit** is £2 000.

b) The **cost** of another car is £8 000.  
Find the **monthly payment** when the **deposit** is £2 600.

Question 4 - ( 5 marks available )

A football team has  $P$  points.

$$P = 3W + D$$

$W$  is the number of wins.

$D$  is the number of draws.

a) A team has 5 wins and 3 draws.  
How many points does the team have?

b) After 35 games a different team has 50 points.  
14 games were draws.  
How many games has this team **lost**?



Question 5 - ( 1 marks available )

Which of the following is the reciprocal of 5?



- |     |   |               |    |
|-----|---|---------------|----|
| A   | B | C             | D  |
| 0.5 | 5 | $\frac{1}{5}$ | 50 |

Question 6 - ( 1 marks available )

Which of the following is the reciprocal of  $\frac{1}{4}$  ?



- |     |               |      |   |
|-----|---------------|------|---|
| A   | B             | C    | D |
| 0.4 | $\frac{3}{4}$ | 0.25 | 4 |

Question 7 - ( 2 marks available )

Work out the reciprocal of



a)  $\frac{7}{10}$

b) 3.5

Question 8 - ( 4 marks available )

Simplify the following:



a)  $3^2 \times 3^2$

b)  $7 \times 7^4$

c)  $10^9 \div 10^7$

d)  $5^8 \div 5$

Question 9 - ( 2 marks available )

a) What is the value of  $6^2$ ?



b) What is the value of  $\sqrt{81}$  ?

Question 10 - ( 3 marks available )

Mr Leonard wants to top-up his central heating oil tank.



The oil tank can take up to 1200 litres of oil.  
There are already 450 litres of oil in the tank.

The price of oil is 81.5p per litre.  
As a loyal customer, Mr Leonard gets a 7.5% discount on the price of the oil.

How much discount does Mr Leonard get on this purchase?  
Give your answer in £.

Question 11 - ( 3 marks available )

Paper clips are sold in boxes of 1000.  
Each box costs £15.40



The table below shows the discount offered for large orders.

Total order	Discount
£40 - £54.99	5%
£55 - £79.99	6.5%
£80 and above	8%

Ethan orders 5 boxes of paper clips.

Work out the amount of discount Ethan gets.

Question 12 - ( 2 marks available )

Ben scores 56 out of 79 marks in a Maths test.



What is his score as a percentage to 1 decimal place?

Question 13 - ( 2 marks available )

Ian scores 44 out of 60 marks in a Maths test.



What is his score as a percentage to 1 decimal place?

Question 14 - ( 3 marks available )

Andy is buying a car.



He negotiated a 7% decrease on a £6 500 car.

He will pay the full balance in 12 equal monthly payments.

Calculate the amount paid each month.

Question 15 - ( 2 marks available )

In January 2011 the rate of VAT increased from 17.5% to 20%.



Work out the difference in price of a car worth £15 000 + VAT due to the increase in VAT.

Question 16 - ( 2 marks available )

Prices for a day-ticket entrance at the Disneyland Paris Resort are as follows:



Day-ticket Entrance	Prices
Adult	£55
Children	£45
Family (2 adults, 2 children)	£170

Work out the percentage discount offered with the family ticket option.

Question 17 - ( 4 marks available )

A company makes Poppy Lapel Pins.  
Each of them costs £1.10 to make.



In October it made 1000 lapel pins.

35% of them are given to charities.

The rest are sold in two formats: 60% of them at £3.00 each  
40% of them at £5.00 for 2

Assuming that all the lapel pins will be sold by the end of November,  
work out the percentage profit the company should make.  
Give your answer to 1 decimal place.

Question 18 - ( 2 marks available )

Hamid has gained weight.  
He now weighs 88 kg, which is 10% higher than a month ago.



How much did Hamid weigh a month ago?

Question 19 - ( 2 marks available )

Jason went shopping.  
He bought a watch and a pair of trainers for a total price of £53.55  
This price includes a 15% loyalty discount.



Before the discount, the trainers were priced at £38.

Work out the price of the watch **before** the discount.

Question 20 - ( 4 marks available )

Sarah competes in a long jump competition.  
Her first jump is 4.25 m.  
Her best jump is 12% more than this.  
However, her best jump is 15% lower than the winning jump.



Work out the length of the winning jump.

Question 21 - ( 3 marks available )

If £2000 is placed into a bank account that pays 3% compound interest per year, how much will be in the account after 2 years?



Question 22 - ( 3 marks available )

Harry invests £6000 in a savings account. The account pays 3.4% compound interest per year.



Work out the value of his investment after 3 years. Give your answer to the nearest penny.

Question 23 - ( 4 marks available )

On the 1st January 2014 Carol invested some money in a bank account. The account pays 2.5% compound interest per year. On 1st January 2015 Carol withdrew £1000 from the account. On 1st January 2016 she had £23 517.60 in the account.



Work out how much Carol originally invested in the account.

Question 24 - ( 2 marks available )

Edin has £300 in his savings account. His bank offers him a fixed 5% simple interest rate per annum, for a period of 3 years.



How much interest will he have earned after 3 years?

Question 25 - ( 2 marks available )

Dylan invested some money in his bank.  
He agreed a simple interest rate of 3% per annum for a period of 2 years.  
At the end of the 2-year period the value of his investment increased by £72.



Work out the value of Dylan's initial investment.

Question 27 - ( 2 marks available )

Five **whole** numbers are written in order.



4   6   x   y   10

The mean and median of the five numbers are the same.

Work out the values of x and y.

Question 26 - ( 3 marks available )

The heights, in cm, of some pupils are:

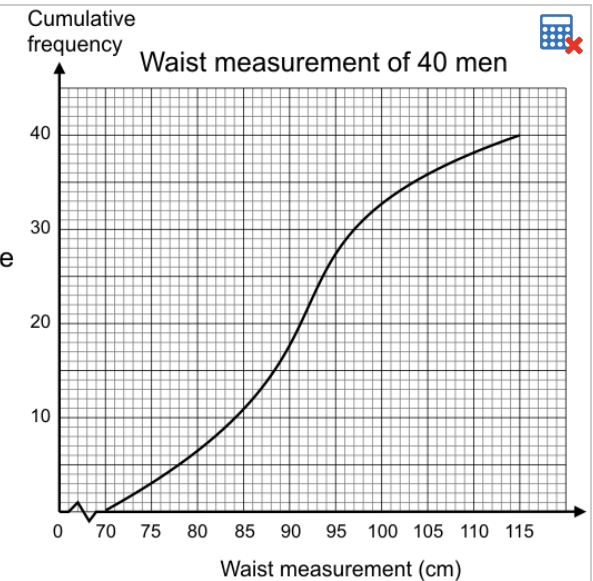


149   111   171   166   152   129   162   144

- Find the mean height of the pupils.
- Find the median height of the pupils.
- Find the range of the heights of the pupils.

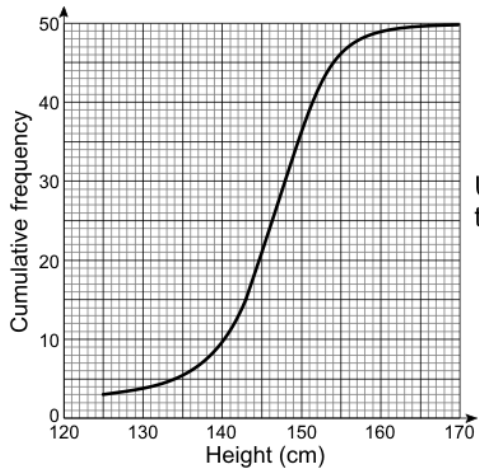
Question 28 - ( 4 marks available )

- How many men have a waist measurement of **more** than 85 cm?
- What is the median waist measurement?
- What is the interquartile range of the waist measurements?



Question 29 - ( 2 marks available )

The heights, in cm, of 50 students are recorded and used to draw the cumulative frequency graph shown below.



Use the graph to estimate the number of these students with a height above 150 cm.

students

Question 30 - ( 3 marks available )

The stem and leaf diagram shows the ages of people in a cinema.

2		1 3
3		0 2 2 5
4		3 4 6 8 9 9
5		0 2 2 3 5

Key: 2 | 1 represents 21 years

- What is the range of ages?          years
- How many people are represented in the diagram?          people
- What is the median age?          years old