Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Substitution

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

Write your name in the space provided.

Write your answers in the spaces provided in this question paper.

Answer ALL questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

Total Marks :

1) $I = PRT$

Find the value of I when $P = 20$, $R = 8$ and $T = 0.75$

Answer I = _____[2]

2) The formula used to calculate the cost of getting a house painted is

Cost = Twenty-five × Number of hours + Price of paint

For Ms Kerr's house, the Number of hours was 30 and the Price of paint was £150. Calculate the cost of getting her house painted.

Answer £ _____ [2]

3) The instructions on a ready meal indicate that it should be cooked in an oven at a temperature of 400 °F. What is this temperature in degrees Celsius **to the nearest degree**? Use the formula C = (F – 32) × 5/9

Answer _____°C [3]

4) Given that $a = -6$, $b = 3$ and $c = 4$, find the value of each of the following expressions.

(i) $\frac{a^2}{4} - a$ [2]

(ii) $(2b)^3$ [2]

(iii) $\frac{8 \cdot 5a + b}{c}$ [3]

5) Given that $P = 5Q + 2R$, find R when $P = 39$ and $Q = -6{\cdot}2$. [3]

6) Given that $d = -2$, $e = 3$ and $f = 5$, find the value of each of the following.

(i) d^3 [1]

(ii) $e^2 + df$ [1]

(iii) $\frac{1}{f}(e - d)$ [1]

7) A washing machine engineer takes 1 hour 15 minutes to service a machine.

The cost is found using the following formula:

Cost = £40 × number of hours worked + total cost of parts

Calculate the cost for servicing 6 washing machines when the total cost of parts is £87. [4]

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8) A van hire company uses the following formula to calculate how much to charge their customers.

Charge = £12 per hour + 50p per mile travelled

Harry hired the van for 7 hours and travelled 90 miles during this time.
How much was he charged? [3]

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9) 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:

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

(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]

10)

(a) x and y are two different numbers taken from the list below.

3	4	5	6	7	8

(i) What values of x and y will make $3x - 2y$ equal zero? [1]

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x = ... and y = ...

(ii) Work out the greatest possible value of $3x - 2y$. [1]

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(iii) Work out the least possible value of $3x - 2y$. [1]

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(b) Find the value of $3(a - 2b)$ when $a = -9$ and $b = \frac{1}{2}$. [2]

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11)
MyPrint uses the following formula for working out the charges for business cards,

$$C = 20 + \frac{5(n - 1000)}{1000}$$

where

- C is the charge in £, and
- n is the number of business cards printed.

(i) Use this formula to calculate the charge for 56 500 business cards. [2]

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(ii) A trainee in the offices of *MyPrint* takes a telephone call from a customer requesting 800 business cards.
Explain why the formula cannot be used. [1]

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12)

Dylan uses the following formula to work out the 'miles per gallon' for his car.

$$\text{miles per gallon} = \frac{\text{miles travelled} \times 4{\cdot}546}{\text{litres of fuel used}}$$

One weekend, Dylan travelled by car from Holyhead to Swindon.
He then went on to Cardiff before returning to Holyhead.

The distance travelled from Holyhead to Swindon was 256 miles.

The distance travelled from Swindon to Cardiff was 88 miles.

The distance travelled from Cardiff back to Holyhead was 227 miles.

Dylan used a total of 62 litres of fuel for these journeys.

Calculate the 'miles per gallon' for his car for this weekend.
Give your answer to the nearest whole number. [4]

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