

Calculator

- 1) A company receives 1250 orders in December.
It has a January sale.
It receives 1430 orders in January.

Work out the percentage increase in orders.

(Total 3 marks)

- 2) (a) Write these numbers in ascending order.

$$9812 \qquad 9.82 \times 10^2 \qquad 9.81 \times 10^3$$

(1)

- (b) Jon is multiplying two numbers given in standard form.

$$\begin{aligned} 2 \times 10^6 \times 3 \times 10^7 &= (2 \times 3) \times 10^{(6+7)} \\ &= 6 \times 10^{13} \end{aligned}$$

He says,

“So, for any numbers

$$a \times 10^b \times c \times 10^d = (a \times c) \times 10^{(b+d)}$$

which will **always** be in standard form.”

Is he correct that $(a \times c) \times 10^{(b+d)}$ will **always** be in standard form?

Tick a box.

Correct

Not correct

Show working to support your answer.

(2)

(Total 3 marks)

- 3) (a) Expand and simplify $(x + 5)(x + 9)$

(2)

- (b) Factorise fully $5x^2 - 10xy$

(2)

(Total 4 marks)

- 4) (a) Simplify fully $2a^3b \times a^2b^6$

(2)

- (b) Simplify fully $\frac{4c^3d^2}{8cd^2}$

2)

(Total 4 marks)

- 5) A train ticket costs £23.50
The price increases by 6%.
Felix has £100.

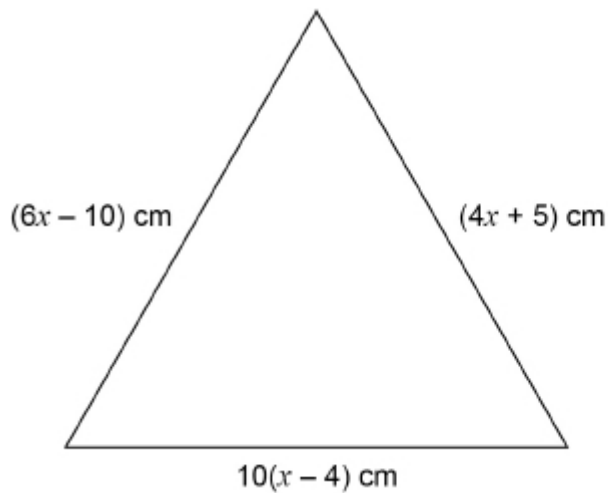
Can Felix buy four tickets at the new price?

(Total 4 marks)

- 6) Simplify $(2cd^4)^3$

(Total 2 marks)

- 7) This triangle is **equilateral**.



Not drawn accurately

Is the perimeter of the triangle greater than one metre?
You **must** show your working.

(Total 5 marks)

- 8) Expand and simplify $(t + 4)^3$

(Total 3 marks)

Non-Calculator

- 1) Circle the calculation that increases 50 by 200%

50×1.2

50×2

50×2.2

50×3

(Total 1 mark)

- 2) The counters in a bag are red or blue.
One fifth of the counters are red.

Work out the ratio red counters : blue counters

Circle your answer.

$1 : 4$

$1 : 5$

$4 : 5$

$1 : 6$

(Total 1 mark)

- 3) (a) Work out $9174 \div 11$

(2)

- (b) Work out $\frac{5}{6} + \frac{3}{7}$ (the symbol is an addition sign)

Give your answer as a mixed number.**(3)**

(Total 5 marks)

- 4) Diaries are sold in boxes of 12
Pencils are sold in boxes of 10
Rulers are sold in boxes of 6

A teacher wants to buy the same number of diaries, pencils and rulers.

Work out the **smallest** number of boxes of each item he could buy.

(Total 3 marks)

- 5) Circle the decimal that is closest in value to $\frac{39}{800}$

0.04

0.048

0.049

0.05

Total 1 mark)

- 6) Dan has lost weight.
He now weighs 108 kg.
He has lost 10% of his weight since March.

How much did he weigh in March?

(Total 3 marks)

Q7.

(a) Solve $\frac{2x-5}{3} = 2$

(2)

(b) Factorise fully $4t - 20$

(1)

(c) Expand and simplify $3(2m - 4) + 5(m + 2)$

(2)

(Total 5 marks)

- 8) Work out the value of $5.4 \times 10^5 \times 2 \times 10^{-2}$

Give your answer in standard form.

(Total 2 marks)

9) $\frac{1}{2} : \frac{2}{3} = x : 1$

Circle the value of x.

$\frac{1}{3}$

$\frac{3}{5}$

$\frac{3}{4}$

$\frac{4}{3}$

(Total 1 mark)

10) Work out $\frac{7.2 \times 10^{-8}}{1.6 \times 10^{-5}}$

Give your answer as an ordinary number.

(Total 3 marks)

- 11) Prove algebraically that $2.7\dot{5}$ converts to the fraction $\frac{124}{45}$

(Total 3 marks)

Answer List – Calculator Paper

- 1) 14.4
- 2a) 9.82×10^2 9.81×10^3 9812
- b) Not correct and suitable example with $ac > 10$
- 3a) $x^2 + 14x + 45$
- b) $5x(x - 2y)$
- 4a) $2a^5b^7$
- b) $\frac{c^2}{2}$
- 5) Yes with justification (24.91 or 99.64 or 4...)
- 6) $8c^3d^{12}$
- 7) 7.5 oe perimeter = 105cm so yes
- 8) $t^3 + 12t^2 + 48t + 64$

Non calculator

- 1) 50 x 3
- 2) 1 : 4
- 3a) 834
- b) $1\frac{11}{42}$
- 4) 60
- 5) 0.049
- 6) 120kg
- 7a) 11/2
- b) $4(t - 5)$
- c) $11m - 2$
- 8) 1.08×10^4
- 9) $\frac{3}{4}$
- 10) 0.045
- 11) correct proof