



Name	
Current School	

Mathematics

Entrance exam for: Pre-Diploma (Sample)

Time allowed: 45 minutes

Total marks: 50

Please read this information before the examination starts

- Answer **all** questions
- Please write your solutions on the question paper and, where relevant, in the designated space.
- You may **not** use a calculator.

Section A (20 marks)

Section A is designed to test core skills and understanding. You should answer each question in the answer box on the right-hand side.

Section B (30 marks)

Section B contains a greater element of problem solving. It contains a mixture of multiple choice and written answer questions. You should complete the written answer questions in the space provided and you will be marked on the presentation of your written work in addition to your final solution; answers without supporting work/calculations may not score full marks.

For office use only

Marks awarded:	
Comments:	

Section A

Each of the following questions are worth 1 mark

Write your answers down the right-hand side

		Answer
1	Calculate $573 + 48$	
2	Calculate $20 - 2 \times 5 - 7$	
3	Calculate $\frac{2}{3} + \frac{1}{6} - \frac{1}{12}$	
4	Calculate $5 \times \frac{7}{3}$	
5	Calculate 435×7	

6	Find the value of $\left(\frac{2}{3}\right)^2$	
7	Find the value of 4^{-2} <i>Hint: $x^{-a} = \frac{1}{x^a}$</i>	
8	Solve $2x + 7 = 11$	
9	Solve $3(x - 4) = 12$	
10	At the bakers, iced buns cost 80p and cinnamon rolls cost £1.10. How much do 2 iced buns and 1 cinnamon roll cost?	

Each of the following questions are worth 2 marks

Write your answers down the right-hand side

		Answer
11	If $a = 7, b = -3$ and $c = 2$, find the value of $\frac{a-2c+b^2}{3}$	
12	Solve $5(3b - 4) = 22 - 6b$	
13	Expand and simplify $5(4y + 5) - 3(5y - 1)$	

14	Make k the subject of the equation $2p = \frac{7k-3}{8}$	
15	I increase £300 by 60%. Then, I increase the new amount by 10%. What percentage of the original amount do I have now?	

Section B

Each of these multiple choice questions is worth 2 marks.

If you give an incorrect answer you will be **deducted** 1 mark.

Write your answer by putting the relevant letter on the right hand side.

		Answer
1	<p>Which statement is true?</p> <p>A: $24 \times 70 = 74 \times 20$ B: $24 \times 70 = 48 \times 35$ C: $24 \times 70 = 12 \times 35$ D: $24 \times 70 = 48 \times 140$</p>	
2	<p>If two of the sides of a right-angled triangle are 5 cm and 6 cm long, how many possibilities are there for the length of the third side?</p> <p>A: 0 B: 1 C: 2 D: 3</p>	
3	<p>A line parallel to $y = 3x - 5$ passes through the point (2, 9). What is its equation?</p> <p>A: $y = 9x + 3$ B: $y = 3x + 3$ C: $y = 3x + 9$ D: $y = 3x + 7$</p>	

4	<p>Write</p> $x^2 + 4x + 3$ <p>In the form</p> $(x + p)^2 + q$ <p>A: $(x + 2)^2 - 4$ B: $(x + 2)^2 - 3$</p> <p>C: $(x + 2)^2 - 1$ D: $(x + 2)^2 - 7$</p>	
5	<p>One of the following is the largest of nine consecutive positive integers whose sum is a perfect square. Which one is it?</p> <p>A: 118 B: 128 C: 138 D: 148</p>	

For the following questions you should show all of your working clearly.

Correct answers without working may not receive full marks.

6 Solve the following pairs of simultaneous equations

[3]

$$2x + 3y = 10$$

$$5x - y = -9$$

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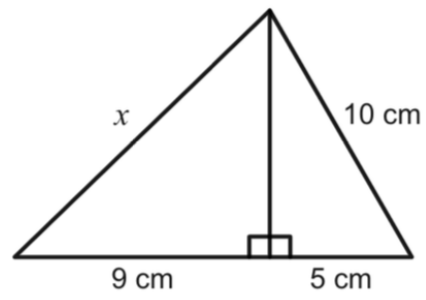
7 Solve $3n + 2 \leq 4n - 5$

[2]

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- 8 Work out the length of x , giving your answer as a surd in its simplest form.
A surd is a number in the form $a\sqrt{b}$.

[5]



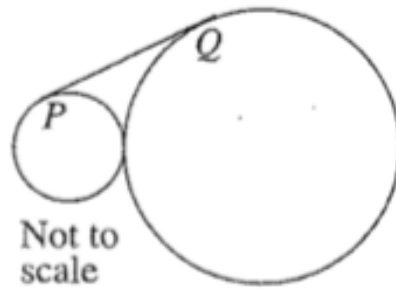
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- 10 A cup of tea costs $\pounds x$ and coffee is $\pounds 2x - \frac{1}{4}$, where x is in pounds.
If 3 teas and 2 coffees cost $\pounds 5.80$, find x .

[5]

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- 11 Two circles with radii 1 cm and 4 cm touch. The point P is on the smaller circle, Q is on the larger circle and PQ is a tangent to both circles. [5]



Find the length PQ .