FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

A2: Substitution

Substitute numerical values into formulae and expressions

20 marks · 25 minutes · Non-calculator

1) $a = 4$ and $b = -3$

(a) Evaluate $5a + 2b$

.....

(1)

(b) Evaluate $a^2 - b^2$

.....

(2)

(c) Evaluate $\frac{ab}{6}$

.....

(1)

[Question 1: 4 marks]

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

Find s when $u = 3$, $t = 4$ and $a = 5$

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[Question 2: 2 marks]

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3) The kinetic energy of an object is $E = \frac{1}{2}mv^2$

Find E when $m = 6$ and $v = -4$

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[Question 3: 2 marks]

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4) Evaluate $2x^3 - 5x$ when $x = -2$

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[Question 4: 2 marks]

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5) $v = u + at$. Find v when $u = 12$, $a = -3$ and $t = 5$

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[Question 5: 2 marks]

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6) $p = -2$ and $q = 5$

(a) Evaluate $p^2 + 3q$

.....

(1)

(b) Evaluate $(p - q)^2$

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(1)

(c) Evaluate $\dfrac{2p + q}{q - p}$

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(1)

[Question 6: 3 marks]

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7) The area of a circle is $A = \pi r^2$. Find A when $r = 4$. Leave your answer in terms of π.

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[Question 7: 1 marks]

8) The area of a trapezium is $A = \frac{(a+b)h}{2}$. Find A when $a = 5$, $b = 9$ and $h = 4$

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[Question 8: 2 marks]

9) $c = \sqrt{a^2 + b^2}$. Find c when $a = 6$ and $b = 8$

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[Question 9: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) 14 (b) 7 (c) -2	(a) B1. (b) $16 - 9$ (M1); A1. (c) B1.
2	52	$3 \times 4 + \frac{1}{2} \times 5 \times 16$ (M1); A1.
3	48	$\frac{1}{2} \times 6 \times 16$ (M1); A1.
4	-6	$2 \times (-8) - 5 \times (-2)$ (M1); A1.
5	-3	$12 + (-3) \times 5$ (M1); A1.
6	(a) 19 (b) 49 (c) $\frac{1}{7}$	B1 each.
7	16π	B1.
8	28	$\frac{14 \times 4}{2}$ (M1); A1.
9	10	$\sqrt{36 + 64}$ (M1); A1.