



Year 10A Mathematics

End Term 1

55 marks

45 mins

Date

Instructions: 1. Answer all questions 2. Calculators permitted

Sample 1

Question 1 (12 marks - 1 mark each)

a) Expand each of the following:

i) $-5(x + 2)$

ii) $(x + 1)(x + 3)$

iii) $(x^3 + 3)(x^2 - 2)$

b) Factorise each of the following:

i) $5x + 10$

ii) $4x^2 + 20x$

iii) $6n^5 - 30n^2$

c) Simplify the following algebraic expressions:

i) $2b \times -3b^3$

ii) $2a^3b^2 \times 4a^{-4}b^{-3}$

iii) $16x^4 \div 4x^2$

iv) $-12c^6 \div -4c^2$

v) $\frac{4x}{3} + \frac{x}{3}$

vi) $\frac{5x^3}{4} - \frac{3x^3}{4}$

Question 2 (15 marks)

a) Graph the solutions to the following inequations on the number line:

i) $x + 3 > 5$

ii) $x/3 > -1$

iii) $2x + 1 \leq -5$

(1,1,1)

b) Use a graphical method to solve the pairs of simultaneous equations:

i) $y = 6x + 1$
 $y = 2x + 5$

x	-2	-1	0	1	2
y=6x+1					

x	-2	-1	0	1	2
y=2x+5					

ii) $y = x + 3$
 $y = 3x - 1$

x	-2	-1	0	1	2
y=x+3					

x	-2	-1	0	1	2
y=3x-1					

(2,2)

c) Use the substitution method to solve the pair of simultaneous equations:

i) $x + y = 6$
 $x = y - 4$

ii) $x + y = 89$
 $y = x + 25$

(2,2)

d) Use the elimination method to solve the pair of simultaneous equations:

i) $x + y = 18$
 $x - y = 8$

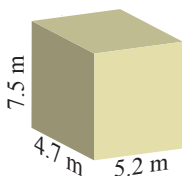
ii) $x + 2y = -1$
 $3x + y = 7$

(2,2)

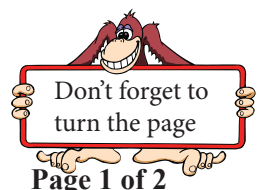
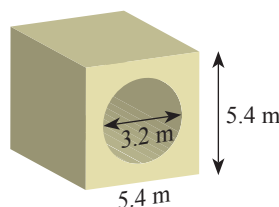
Question 3 (12 marks - 2 marks each)

a) Find the volume and the surface area of each of the following prisms:

i)

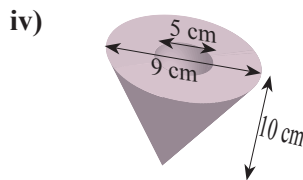
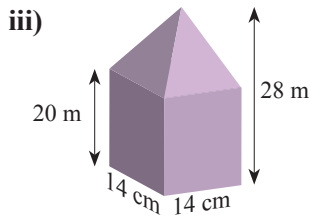
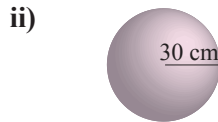
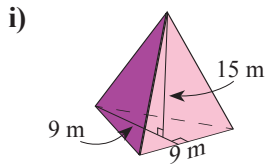


ii)



Question 3 Continued

b) **10A** Calculate the volume of each of the following:



Question 4 (16 marks - 1 mark each)

a) **10A** Simplify the following surd: $\sqrt{3} \times \sqrt{12}$

b) **10A** Expand and simplify: $(2\sqrt{6} + \sqrt{2})(3 - 5\sqrt{3})$

c) **10A** Simplify each of the following:

i) $16^{\frac{3}{4}}$

ii) $\left(\frac{8}{64}\right)^{-\frac{2}{3}}$

iii) $10^{3/2} \times 10^{-1/2}$

iv) $9^{3/4} \div 9^{1/4}$

v) $6x^{1/4} \div 3x^{-1/4}$

vi) $(x^{1/2}y^3)^{2/3}$

d) **10A** Rewrite the index as a log: $64 = 2^6$

e) **10A** Rewrite the log as an index: $\log_{10}100 = 2$

f) **10A** Simplify the following:

i) $\log_{10}20 + \log_{10}5$

ii) $\log_816 + \log_82 + \log_84 + \log_832$

iii) $\log_480 - \log_45$

iv) $\log_248 + \log_225 - \log_275$

v) \log_55^3

vi) $\log_{10}10^4$

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Did you find your silly mistakes?





Year 10A Mathematics

End Term 1

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Date

Instructions: 1. Answer all questions 2. Calculators permitted

Sample 2

Question 1 (12 marks - 1 mark each)

a) Expand each of the following:

i) $-x(x + 3)$

ii) $(x + 5)(x + 3)$

iii) $(x^2 - 2)^2$

b) Factorise each of the following:

i) $3x + 12$

ii) $8x + 20x^3$

iii) $9b^5 - 30b^3$

c) Simplify the following algebraic expressions:

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

ii) $3a^2b^4 \times 4a^{-2}b^{-2}$

iii) $12x^5 \div 4x^2$

iv) $-15d^6 \div -3d^2$

v) $\frac{7x}{4} - \frac{3x}{4}$

vi) $\frac{3a^3}{4} + \frac{5a^3}{4}$

Question 2 (15 marks)

a) Graph the solutions to the following inequations on the number line:

i) $x + 5 < 7$

ii) $x/2 > 3$

iii) $5x + 1 \leq -4$

(1,1,1)

b) Use a graphical method to solve the pairs of simultaneous equations:

i) $y = 4x - 7$
 $y = 2x - 3$

x	-2	-1	0	1	2
y=4x-7					

x	-2	-1	0	1	2
y=2x-3					

ii) $y = 3x - 7$
 $y = x - 3$

x	-2	-1	0	1	2
y=x-3					

x	-2	-1	0	1	2
y=3x-7					

(2,2)

c) Use the substitution method to solve the pair of simultaneous equations:

i) $x + y = 12$
 $x = y - 8$

ii) $x + y = 89$
 $y = x + 25$

(2,2)

d) Use the elimination method to solve the pair of simultaneous equations:

i) $x + y = 23$
 $x - y = 9$

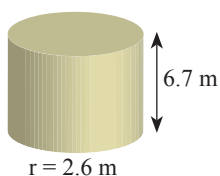
ii) $2x + y = -2$
 $x + 2y = 5$

(2,2)

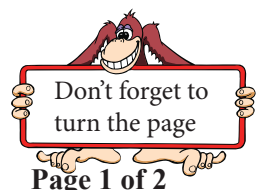
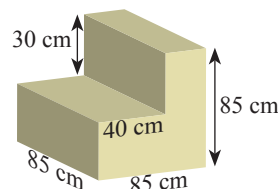
Question 3 (12 marks - 2 marks each)

a) Find the volume and the surface area of each of the following prisms:

i)

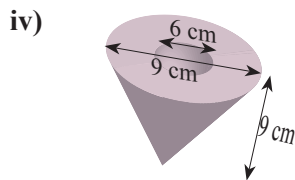
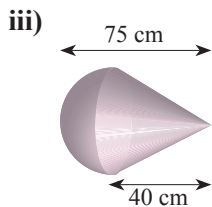
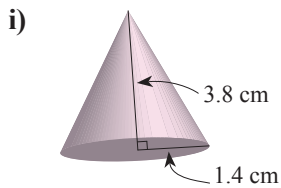


ii)



Question 3 Continued

b) **10A** Calculate the volume of each of the following:



Question 4 (16 marks - 1 mark each)

a) **10A** Simplify the following surd: $\sqrt{3} \times \sqrt{6}$

b) **10A** Expand and simplify: $(\sqrt{2} - 2\sqrt{3})(3 - \sqrt{6})$

c) **10A** Simplify each of the following:

i) $64^{\frac{3}{2}}$

ii) $\left(\frac{8}{27}\right)^{\frac{2}{3}}$

iii) $10^{5/2} \times 10^{-1/2}$

iv) $4a^{3/4} \div 2a^{1/4}$

v) $6x^{3/2} \div 2x^{-1/2}$

vi) $(x^{1/3}y^4)^{3/2}$

d) **10A** Rewrite the index as a log: $243 = 3^5$

e) **10A** Rewrite the log as an index: $\log_2 8 = 3$

f) **10A** Simplify the following:

i) $\log_5 25$

ii) $\log_6 9 + \log_6 4$

iii) $\log_3 54 - \log_3 6$

iv) $\log_3 15 + \log_3 54 - \log_3 10$

v) $\log_3 3^5$

vi) $\log_{10} 10^7$

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Did you find your silly mistakes?

