Year 10 Mathematics

End Term 1

35 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) $\dfrac{4x}{3} + \dfrac{x}{3}$
  vi) $\dfrac{5x^3}{4} - \dfrac{3x^3}{4}$

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) $2x + 1 \le {}^-5$
  (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)

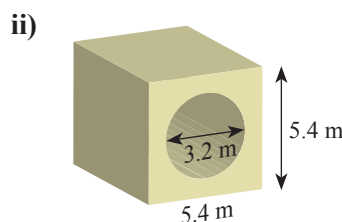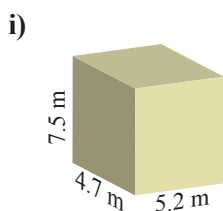**d)** Use the **elimination method** to solve the pair of simultaneous equations:
  i) $x + y = 18$
       $x - y = 8$
  ii) $x + 2y = {}^-1$
       $3x + y = 7$
  (2,2)

Question 3 (8 marks - 4 marks each)

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

  i)
  ii)

7.5 m
4.7 m   5.2 m

5.4 m
3.2 m
5.4 m
5.4 m

Did you find your silly mistakes?

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Year 10 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)** $\dfrac{7x}{4} - \dfrac{3x}{4}$ **vi)** $\dfrac{3a^3}{4} + \dfrac{5a^3}{4}$

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) $x + y = 12$ **ii)** $x + y = 89$
      $x = y - 8$ $y = x + 25$ (2,2)

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

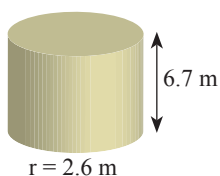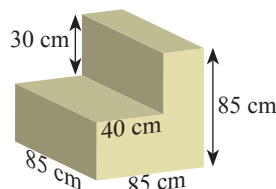   **i)** $x + y = 23$ **ii)** $2x + y = {}^-2$
      $x - y = 9$ $x + 2y = 5$ (2,2)

Question 3 (8 marks - 4 marks each)

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

   i)

6.7 m

r = 2.6 m

   ii)

30 cm

85 cm

40 cm

85 cm

85 cm

Did you find your silly mistakes?

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