



Year 9 Mathematics

End Term 4

50 marks

45 mins

Date

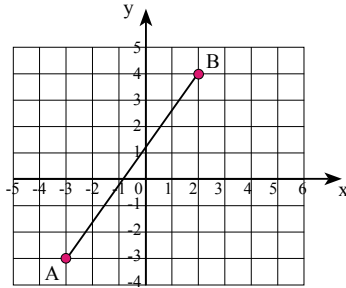
Instructions: 1. Answer all questions 2. Calculators permitted

Sample 1

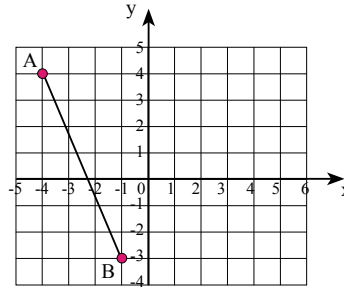
Question 1 (16 marks)

a) Find the length, gradient, and midpoint of AB

i)



ii)



iii) A(1,1), B(3,6)

iv) A(-1,-4), B(3,-2)

(3,3,3,3)

b) A parallelogram has the four endpoints A(-4,-5), B(-7,-1), C(-5,0), D(-2,-4).

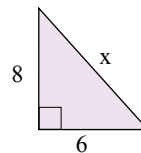
i) Show that AB is parallel to CD (ie have the same gradient). (2)

ii) Show that the opposite sides are equal in length. (2)

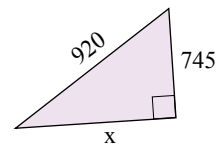
Question 2 (11 marks)

a) Use Pythagoras' Theorem to find the unknown:

i)



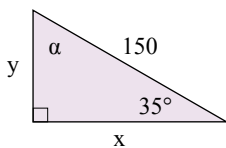
ii)



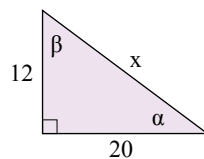
(1,1)

b) Solve the following triangles:

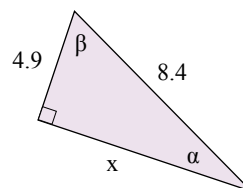
i)



ii)

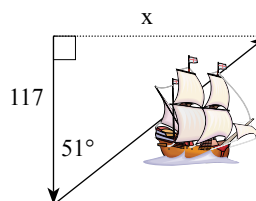


iii)

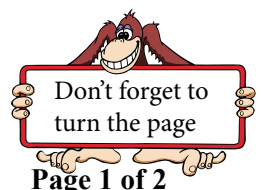


(2,2,2)

c) A sailing boat sails south for 117 km, then on a bearing of 51°T until it is due east of its starting point. How far is the boat from its starting point? How far has the boat travelled?



(3)



Question 3 (14 marks - 1 each)

a) Simplify the following expressions:

i) $3x - 7x$

ii) $5a + 4b - 2a + 2b$

iii) $8b^4 \times -4b^2$

iv) $-6d \div 3$

b) Expand each of the following:

i) $3(x + 2)$

ii) $-5x(x - 3)$

c) Simplify each of the following by expanding and then collecting like terms:

i) $-3(x - 3) + 2(x + 2)$

ii) $(x + 2)(x + 1)$

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

d) Factorise each of the following:

i) $4x + 10$

ii) $4t^2 - 12t$

iii) $-2x^3 - 12x$

iv) $x(x - 1) + 5(x - 1)$

Question 3 (9 marks)

a) Describe the following data as quantitative or qualitative:

i) The weights of students in your class.

ii) The country of birth of people in the postcode area.

(1,1)

b) Describe the following quantitative data as discrete or continuous:

i) The daily maximum temperature.

ii) The number of hens in each run.

(1,1)

c) What is the meaning of each of the following:

a) Census?

b) Sample?

c) Random sample?

(1,1,1)

d) How many people of each employee type should be randomly selected in a sample size of 50 employees?

Gender	Type	Number
Female	Full-time	125
Female	Part-time	176
Male	Full-time	187
Male	Part-time	254

(2)

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45 mins

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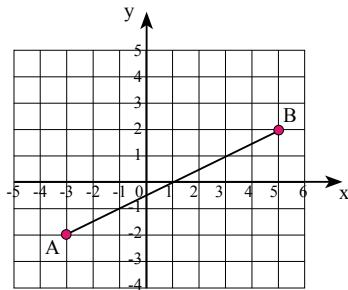
Instructions: 1. Answer all questions 2. Calculators permitted

Sample 2

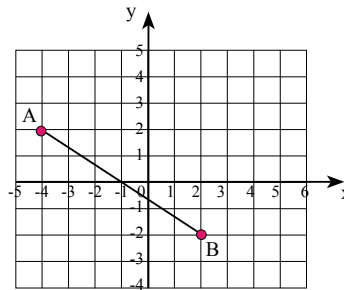
Question 1 (16 marks)

a) Find the length, gradient, and midpoint of AB

i)



ii)



iii) A(2,1), B(3,3)

iv) A(-1,-3), B(3,-2)

(3,3,3,3)

b) A parallelogram has the four endpoints A(-5,0), B(0,2), C(2,4), D(-3,2).

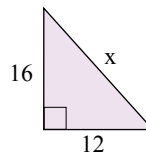
i) Show that AB is parallel to CD (ie have the same gradient). (2)

ii) Show that the opposite sides are equal in length. (2)

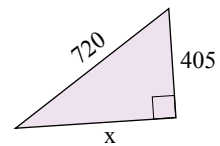
Question 2 (11 marks)

a) Use Pythagoras' Theorem to find the unknown:

i)



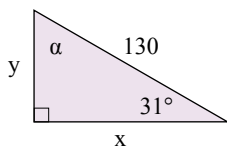
ii)



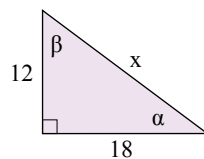
(1,1)

b) Solve the following triangles:

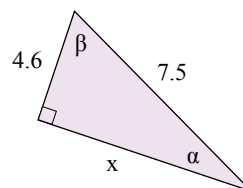
i)



ii)

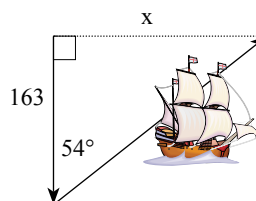


iii)

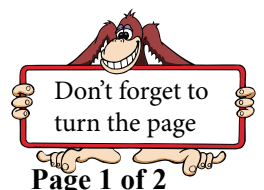


(2,2,2)

c) A sailing boat sails south for 163 km, then on a bearing of 54°T until it is due east of its starting point. How far is the boat from its starting point? How far has the boat travelled?



(3)



Question 3 (14 marks - 1 each)

a) Simplify the following expressions:

i) $2x + 7x$

ii) $4x + 5y - x + 2y$

iii) $4b^4 \times -2b^3$

iv) $-8x \div 2$

b) Expand each of the following: i) $5(x + 2)$ ii) $-2x(x - 4)$

c) Simplify each of the following by expanding and then collecting like terms:

i) $-2(x - 6) + 3(x + 2)$

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

iii) $(x + 1)(x - 1)$

d) Factorise each of the following:

i) $2x + 6$

ii) $4x^2 - 8x$

iii) $-2x^2 - 6x$

iv) $x(x - 2) + 3(x - 2)$

Question 3 (9 marks)

a) Describe the following data as quantitative or qualitative:

i) The marital status of people in the postcode area.

ii) The heights of students in your class.

(1,1)

b) Describe the following quantitative data as discrete or continuous:

i) The time to run 100m.

ii) The pulse rate before and after exercise.

(1,1)

c) What is the meaning of each of the following:

a) Census?

b) Sample?

c) Random sample?

(1,1,1)

d) How many students from each Year level should be randomly selected in a sample size of 60 students?

Year	Number
7	170
8	190
9	140
10	150

(2)

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