Year 9 Mathematics

End Term 3

50 marks

45 mins

Date

Instructions: 1. Answer all questions 2. Calculators permitted

Question 1 (12 marks - 1 mark each)

a) Simplify and write the following in index form:

i) $10^{-6}\times10^{4}$ **ii)** $10^{7}\div10^{-3}$ **iii)** $(10^{-2})^{-3}$ **iv)** $6\times10^{-4}\div(3\times10^{-6})$

b) Write in scientific notation:

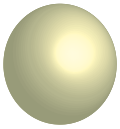
i) 4 800 000 **ii)** 0.000 62 **iii)** Wavelength of green light: 0.000 000 52 m.

c) Write as ordinary numbers:

i) 4.2×10^{6} **ii)** 2×10^{-4} **iii)** The distance from the Earth to the Sun, 1.49×10^{11} m.

d) i) Find the circumference of Venus (Radius = 6.05×10^{6} m).

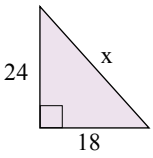
ii) Find the volume of Venus (Radius = 6.05×10^{6} m).



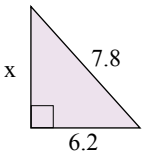
Question 2 (10 marks - 2 marks each)

a) Use Pythagoras' Theorem to find the unknown:

i)

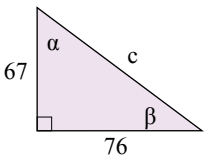


ii)

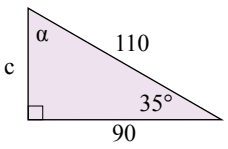


b) Solve the following triangles:

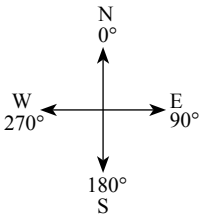
i)

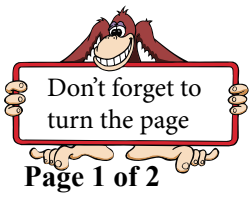


ii)



c) A ship sails due south for 185 km, then on a bearing of 45° until the ship is due east of its starting point. How far is the ship from its starting point?

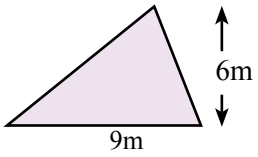




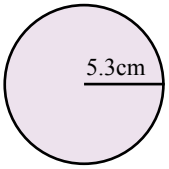
Question 3 (15 marks)

a) Calculate the area of each of the following shapes:

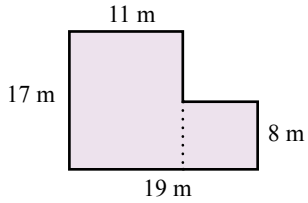
i)



ii)



iii)



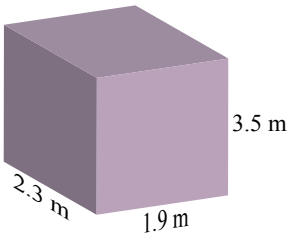
(2,2,2)

b) Make the following unit conversions:

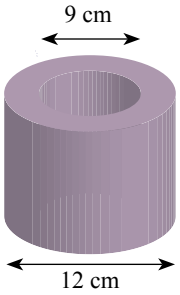
i) 8.2 m^3 to cm^3 **ii)** 8200 mL to L **iii)** 630 000 L to kL (1,1,1)

c) Calculate the volume of each of the following solids:

i)

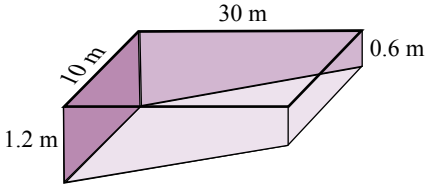


ii)



(2,2)

d) How many litres of water is needed to fill the swimming pool? (2)



Question 3 (13 marks - 1 mark each)

a) Assuming that the chances of a head or tail is equal, use a tree diagram and two-way table to determine the following theoretical probabilities for the tossing of two coins:

i) P(2 heads) **ii)** P(1 head & 1 tail) **ii)** P(2 tails)

b) Determine the following theoretical probabilities when tossing a six-sided die and a coin (Use a tree diagram or two-way table to list all possible outcomes).

i) P(a 1 and a T) **ii)** P(a 3 or a H)

c) Determine the following theoretical probabilities of the **totals** when tossing two dice.

i) P(5 or odd) **ii)** P(5 and odd)

iii) P(<10 or even) **iv)** P(odd or divisible by 3)

d) In a class of 21 students, 16 students passed Maths, and 15 students passed English. Draw a Venn Diagram and find the probability that a student:

i) passed Maths and English.

ii) passed Maths or English.

iii) did not pass Maths.

iv) passed English given that the student also passed Maths.

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Year 9 Mathematics

End Term 3

50 marks

45 mins

Date

Instructions: 1. Answer all questions 2. Calculators permitted

Question 1 (12 marks - 1 mark each)

a) Simplify and write the following in index form:

i) $10^{-5}\times10^{8}$ **ii)** $10^{5}\div10^{-2}$ **iii)** $(10^{-3})^{-4}$ **iv)** $9\times10^{-5}\div(3\times10^{-2})$

b) Write in scientific notation:

i) 670 000 **ii)** 0.000 062

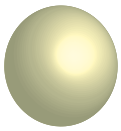
iii) 16 grams of oxygen has 60 000 000 000 000 000 000 000 molecules.

c) Write as ordinary numbers:

i) 9.5×10^{4} **ii)** 6.7×10^{-5} **iii)** Mass of an electron: 9×10^{-28} g

d) i) Find the circumference of Earth (Radius = 6.4×10^{6} m).

ii) Find the volume of Earth (Radius = 6.4×10^{6} m).



Question 2 (10 marks - 2 marks each)

a) Use Pythagoras' Theorem to find the unknown:

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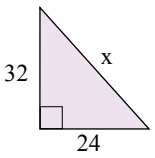
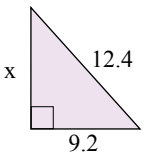


ii)



b) Solve the following triangles:

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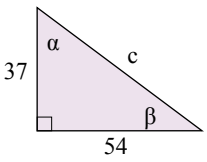

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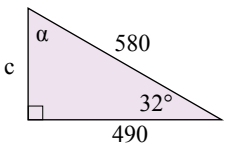
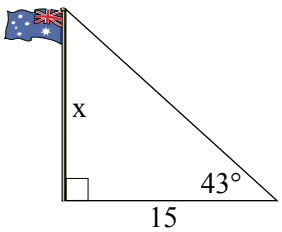
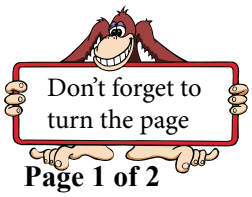


c) 15 m out from the base of a flagpole, a clinometer measures the angle of elevation to the top of the flagpole as 43°. Find the height of the flagpole.





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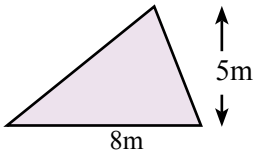
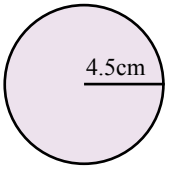
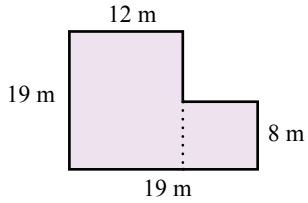


ii)



iii)



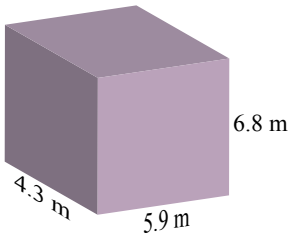
(2,2,2)

b) Make the following unit conversions:

i) 5.2 m^3 to cm^3 **ii)** 7100 mL to L **iii)** 67 000 L to kL (1,1,1)

c) Calculate the volume of each of the following solids:

i)



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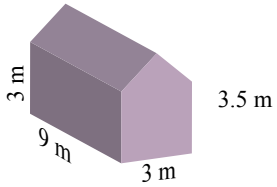

(2,2)

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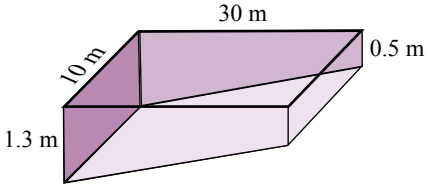

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b) Determine the following theoretical probabilities when tossing a six-sided die and a coin (Use a tree diagram or two-way table to list all possible outcomes).

i) P(a 6 and a H) **ii)** P(a 6 or a H)

c) Determine the following theoretical probabilities of the **totals** when tossing two dice.

i) P(1 or odd) **ii)** P(1 and odd)

iii) P(>10 or even) **iv)** P(odd or divisible by 5)

d) In a class of 22 students, 18 students passed Maths, and 17 students passed English. Draw a Venn Diagram and find the probability that a student:

i) passed Maths and English.

ii) passed Maths or English.

iii) did not pass Maths.

iv) passed English given that the student also passed Maths.

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