ST ANDREW'S CATHEDRAL SCHOOL
Founded 1885

ASSESSMENT TASK 1

YEAR 8

MATHEMATICS

2006

55 MINUTES

50 Marks

Name: _____

Class: _____

INSTRUCTIONS

- There 2 Sections
- Section 1 (Number) is worth 20 marks
- Section 2 (Measurement) is worth 30 marks
- Approved calculators may be used in all parts of the test
- Attempt all questions
- Enter your name and class on each page

SECTION 1 – NUMBER (20 marks)

Show all necessary working in the space provided.

1. Convert to decimals:

   (a) 37% [1 mark]

   (b) $12\frac{1}{4}$% [1 mark]

   (c) $\frac{6}{37}$ [1 mark]

2. Convert to fractions:
   (Answer in simplest form)

   (a) 48% [1 mark]

   (b) $20\frac{2}{3}$% [1 mark]

   (c) 32.15% [1 mark]

3. Convert to percentages:

   (a) 0.32 [1 mark]

   (b) $\frac{23}{50}$ [1 mark]

   (c) 2.35 [1 mark]

4. Decrease $450 by 30% [1 mark]

5. What percentage is 42 kg of 48 kg?
   [1 mark]

5. Rewrite the following three values in ascending order (smallest to biggest): [1 mark]

$$75\frac{1}{2}\%, \quad 0.725, \quad \frac{4}{5}$$

_____

_____

_____

6. The following table shows the breakdown of students in a middle school consisting of 200 students:

Sex	Year 7	Year 8	Year 9
Boys	38	28	38
Girls	34	32	30

(a) What percentage of the middle school students are boys? [2 marks]

_____

_____

_____

(b) What percentage of the middle school are Year 8 students? [2 marks]

_____

_____

_____

7. Sean scored 15% of his team's runs in a cricket match. If he scored 45 runs how many runs did the team score? [2 marks]

_____

_____

_____

_____

_____

_____

_____

8. Martin bought a car which cost $5000. After doing some work on the car he then sold it for $6125. What was Martin's profit as a percentage of the cost price? [2 marks]
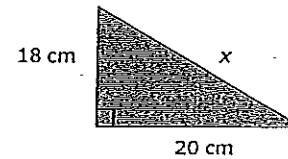
_____

_____
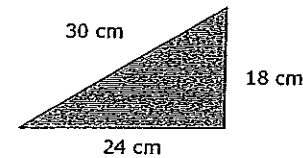
_____

_____

_____

_____

_____

SECTION 2 – MEASUREMENT (30 marks)

Show all necessary working in the space provided.

1. What name is given to the longest side of a right-angled triangle? [1 mark]
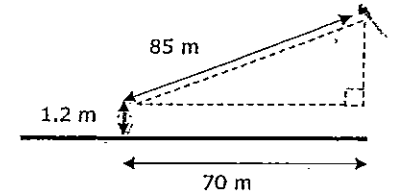
_____

_____

2. Calculate the length of the unknown side x in the triangle below. (Answer to 1 decimal place) [2 marks]

18 cm · x · 20 cm

_____

_____

_____

3. Prove whether or not the triangle below is a right-angled triangle. [2 marks]
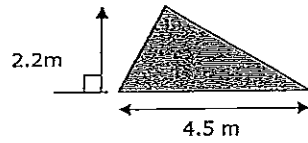

30 cm · 18 cm · 24 cm

_____

_____

_____

4. Determine the height of a boy's kite above the ground if he is holding the end of an 85 m length of string 1.2 m above the ground. (Answer to 1 decimal place) [3 marks]
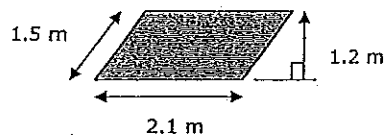

85 m · 1.2 m · 70 m

_____

_____

_____

_____

_____

_____

_____

6. Calculate the area of the triangle below [1 mark]

2.2m

4.5 m

_____

_____

_____

_____

7. How many square centimeters (cm^2) in 2.5 m^2? [1 mark]   260

_____

_____

_____

8. Calculate the area of the parallelogram below. [2 marks]

1.5 m

1.2 m

2.1 m

_____

_____

_____

_____
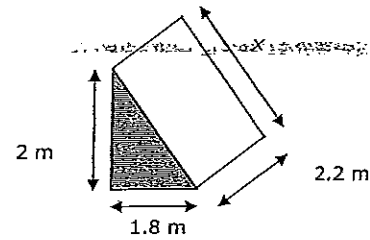
9. A rectangular park is to have two square ponds (2mx2m) placed in it as shown below. What area is left to be covered with grass? [3 marks]

28 m

14 m

10. Determine the volume of a rectangular prism which has a length of 1.5 m, a breadth of 0.9 m and a height of 0.4 m. [1 marks]

_____

_____

_____

11. Consider the triangular prism below:

x

2 m

2.2 m

1.8 m

(a) Calculate the value of x to one decimal place. [1 mark]

_____

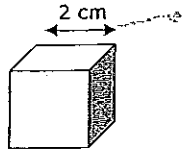(b) Calculate the total surface area of the prism. [3 marks]

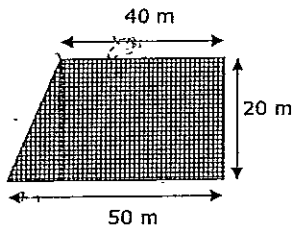12. Calculate the volume of the solid below [3 marks]
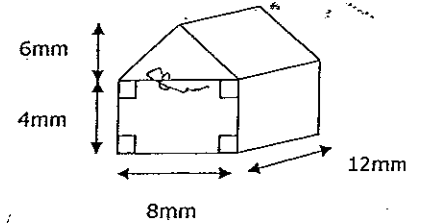
6mm

4mm

12mm

8mm

_____

_____

13. Determine the volume of a cube with sides of 2 cm. [2 marks]

2 cm

_____

_____

_____

_____

14. A rectangular prism is to have a volume (V) of 24m^3. If the breadth (b) is 3 m and the length (l) Is 4 m what must be the height (h)?
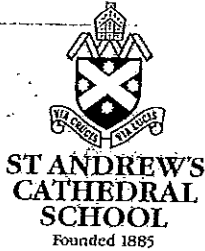[1 mark]

_____

_____

_____

15. A large swimming pool Is to be constructed in the shape shown below.

40 m

20 m

50 m

(a) How many square metres of tiles will be needed to cover the bottom of the pool? [2 marks]

_____

(b) What will be the volume of the pool in cubic metres if it is to have a uniform depth of 1.8 m? (1 mark)

_____

_____

_____

_____

(c) How many litres of water will be needed to fill the pool? [1 mark]

_____

_____

_____

_____

$\dfrac{46}{50}$

92%

ST ANDREW'S CATHEDRAL SCHOOL
Founded 1885

ASSESSMENT TASK 1

YEAR 8

MATHEMATICS

2006

55 MINUTES

50 Marks

Name: Zain Ahmed

Class: 8MA - Freeman

INSTRUCTIONS

- There 2 Sections
- Section 1 (Number) is worth 20 marks
- Section 2 (Measurement) is worth 30 marks
- Approved calculators may be used in all parts of the test
- Attempt all questions
- Enter your name and class on each page

SECTION 1 – NUMBER (20 marks)

Show all necessary working in the space provided.

1. Convert to decimals:

(a) 37% [1 mark]

$37\% = 0.37$ ✓

(b) $12\frac{1}{4}\%$ [1 mark]

$12\frac{1}{4}\% = 0.1225$ ✓

(c) $\frac{6}{37}$ [1 mark]

$(6 \div 37) \times 100$ = $\boxed{0.162\dot{1}}$

0.162 ✗

2. Convert to fractions:
(Answer in simplest form)

(a) 48% [1 mark]

$48\% = \dfrac{48 \div 4}{100 \div 4} = \dfrac{12}{25}$ ✓

(b) $20\frac{2}{3}\%$ [1 mark]

$20\frac{2}{3}\% = \dfrac{\frac{62}{3}}{100} = \dfrac{62}{300} = \dfrac{31}{150}$

(c) 32.15% [1 mark]

$32\frac{10}{3}\% = \dfrac{97}{\frac{3}{100}} = \dfrac{97}{300}$ ✗

$\boxed{32\frac{3}{20}}$

3. Convert to percentages:

(a) 0.32 [1 mark]

$0.32 = 32\%$ ✓

(b) $\frac{23}{50}$ [1 mark]

$\dfrac{23 \times 2}{50 \times 2} = \dfrac{46}{100} = 46\%$ ✓

(c) 2.35 [1 mark]

$2.35 = 235\%$ ✓

4. Decrease $450 by 30% [1 mark]

$(70 \div 100) \times 450$
$= \$315$ ✓

5. What percentage is 42 kg of 48 kg?
[1 mark]

$(42 \div 48) \times 100$

87.5 kg

$= 87.5\%$ ✓

5. Rewrite the following three values in ascending order (smallest to biggest): [1 mark]

$$75\frac{1}{2}\%, \quad 0.725, \quad \frac{4}{5}$$ 80%

① 0.725
② $75\frac{1}{2}\%$
③ 80% ✓

6. The following table shows the breakdown of students in a middle school consisting of 200 students:

Sex	Year 7	Year 8	Year 9	
Boys	38	28	38	→104
Girls	34	32	30	96
	72	60	68	200

(a) What percentage of the middle school students are boys? [2 marks]

$$\frac{104}{200} \times 100 = 52\%$$

(b) What percentage of the middle school are Year 8 students? [2 marks]

$$\frac{60}{200} \times 100 = 30\%$$

Name: Zain
Class: 8MA – Freeman

7. Sean scored 15% of his team's runs in a cricket match. If he scored 45 runs how many runs did the team score? [2 marks]

$45 \div 15 = 3$

then

$3 \times 100 = 300$

∴ His team scored 300 runs

8. Martin bought a car which cost $5000. After doing some work on the car he then sold it for $6125. What was Martin's profit as a percentage of the cost price? [2 marks]

$(1125 \div 5000) \times 100$

$= 22.5\%$

∴ His profit (from) from the cost price was 22.5%
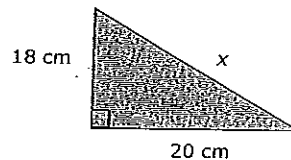

Hyptonese

Name: Zain
Class: 8MA – Freeman

SECTION 2 – MEASUREMENT (30 marks)

Show all necessary working in the space provided.

1. What name is given to the longest side of a right-angled triangle? [1 mark]

(Hyptoness Hyptonone)
(Hyp) Hyptonese

2. Calculate the length of the unknown side x in the triangle below. (Answer to 1 decimal place) [2 marks]
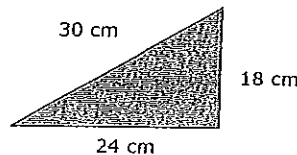
18 cm x

20 cm

$c^2 = a^2 + b^2$
$x^2 = 20^2 + 18^2$
$x^2 = 400 + 324$
$x^2 = \sqrt{724}$
$x = \sqrt{724}$
$x = 26.9\,cm$

3. Prove whether or not the triangle below is a right-angled triangle. [2 marks]

30 cm

18 cm

24 cm

$(LHS)\, c^2 = a^2 + b^2$
$LHS = 30^2 = 900$
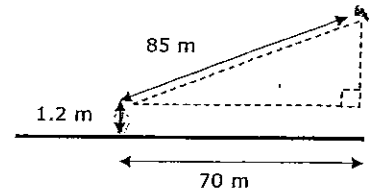$RHS = 24^2 + 18^2$
$= 576 + 324$
$= 900$
∴ LHS = RHS

4. Determine the height of a boy's kite above the ground if he is holding the end of an 85 m length of string 1.2 m above the ground. (Answer to 1 decimal place) [3 marks]

85 m

1.2 m

70 m

$c^2 = a^2 + b^2$
$85^2 = 70^2 + b^2$
$7225 = 4900 + b^2$
$b^2 = 7225 - 4900$
$b^2 = 2325$
$b = \sqrt{2325}$
$b = 48.2\,m$

Height above ground
$h = b + 1.2$
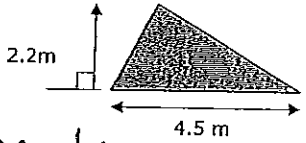$= 48.2 + 1.2$
$= 49.4\,m$

∴ The kite is 49.4 m above ground

6. Calculate the area of the triangle below [1 mark]

2.2m

4.5 m

(i) $A = \frac{1}{2}bh$

$= \frac{1}{2} \times 2.2 \times 4.5$

$= 1.1 \times 4.5$

$= 4.95 m^2$ ✓1

7. How many square centimeters (cm^2) in 2.5 m^2? [1 mark] 250 ∞

(250) 25 000cm^2 in 2.5m^2 ✓1

8. Calculate the area of the parallelogram below. [2 marks]

1.5 m   1.2 m

2.1 m

$A = bh$

$= 2.1 \times 1.2$

$= 2.52 m^2$ ✓2

9. A rectangular park is to have two square ponds (2mx2m) placed in it as shown below. What area is left to be covered with grass? [3 marks]

28 m

14 m

$= 16 - (3 \cdot 82)$
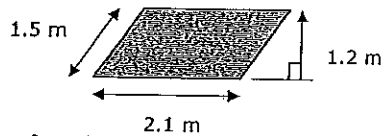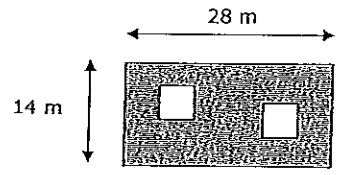
$A = A_1 - (A_2 + A_3)$

$= (28 \times 14) - [2^2 + 2^2]$

$= 392 - (4 + 4)$

$= 392 - 8$

$= 384 m^2$ ✓3

∴ 384m^2 will remain grass

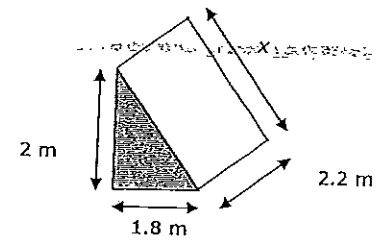**10.** Determine the volume of a rectangular prism which has a length of 1.5 m, a breadth of 0.9 m and a height of 0.4 m. [1 marks]

✓ $V = lbh$

$= 1.5 \times 0.9 \times 0.4$

$= 0.54 m^3$

11. Consider the triangular prism below:

2 m   2.2 m

1.8 m

(a) Calculate the value of x to one decimal place. [1 mark]

$x^2 = a^2 + b^2$

$x^2 = 2^2 + 1.8^2$ ✓

$x^2 = 4 + 3.24$

$x^2 = 7.24$ ①

$x = \sqrt{7.24}$

$x = 2.7 m$ ✓

(b) Calculate the total surface area of the prism. [3 marks]

$SA = lb + lb + lb + \frac{1}{2}bh + \frac{1}{2}bh$

Cross-section (Sides) $2(\frac{1}{2}bh)$

$= 2(\frac{1}{2} \times 2 \times 1.8)$ ✓

$= (1.8 m^2 \times 2) 3.6$ ✓

Bases $A = lb$

$= 2.2 \times 2.7$

$= 5.94 m^2$ ✓ ①

Side $= A = lb$

$= 2 \times 2.2$

$= 4.4$

Side $= A = lb$

$= 1.8 \times 2.2$ ✓ ①

$= 3.96$

$SA = Cross-section + Side + Side + Base + Base$

12. Calculate the volume of the solid below [3 marks]

6mm

4mm

12mm

8mm

$A = \frac{1}{2}bh$

$= \frac{1}{2} \times 8 \times 6$

$= 4 \times 6$
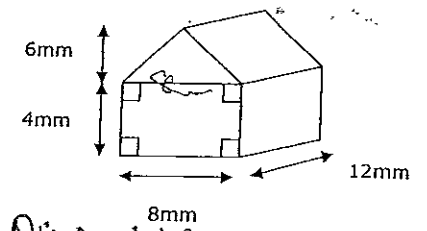
$= 24 mm^2$ ✓ ①

$A_2 = lb$

$= 8 \times 4$

$= 32 mm^2$

$A = A_1 + A_2$ ✓ ①

$= 24 + 32$

$= 68 m^2 (68 mm^2)$ ✓mm

$V = Ah$

$= 68 \times 12$

$= 80 mm^3$

$V = Ah$

$= 56 \times 12$ ✓

$= 672 mm^3$ ①

13. Determine the volume of a cube with sides of 2 cm. [2 marks]

2 cm

$(1) A = s^2$
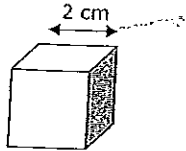
$= (2 \times 2) 2^2$

$= 4 cm^2$ ✓

$V = Ah$

$= 4 \times 4$

$= 16 cm^3$

14. A rectangular prism is to have a volume (V) of 24 m³. If the breadth (b) is 3 m and the length (l) is 4 m what must be the height (h)? [1 mark]
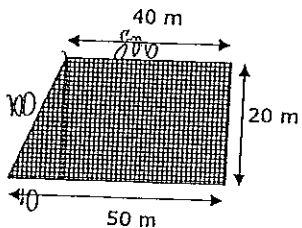
$V = lbh$

$24 m^3 = 3 \times 4 \times h$

$12 h = 24 \div 12$

$h = 2$ ✓

∴ The height is 2 meters

15. A large swimming pool is to be constructed in the shape shown below.

40 m

100

20 m

40

50 m

(a) How many square metres of tiles will be needed to cover the bottom of the pool? [2 marks]

$A = A1 + A3$

$A = \frac{h}{2}(a+b)$

$= \frac{20}{2} \times (50 + 40)$

$= 10 \times 90$

$= 900 m^2$ ✓✓

(b) What will be the volume of the pool in cubic metres if it is to have a uniform depth of 1.8 m? [1 mark]

$V = Ah$

$= 900 \times 1.8$

$= 1620 m^3$ ✓

(c) How many litres of water will be needed to fill the pool? [1 mark]

$1620 L \times$ $1 cm^3 = 1 mL$

$1000 cm^3 = 1 L$

∴ $1620 m^3$ $1 m^3 = 10^6 cm^3$

$= 1620 \times 10^3 L$ $= 1000 L$

$= 1.62 \times 10^6 L$