



High Storrs School Mathematics Department

A-Level Bridging Unit – Assessment

Name:

Score:

/100

Top 3 topics you need to study further are:



Section					Marks
1	Simplifying Like Terms				/6
2	Expanding Brackets				/8
3	Factorising an Expression				/12
4	Laws of Indices for Rational Exponents				/9
5	Manipulating Surds				/6
6	Solving Quadratics by Factorising				/9
7	Solving Quadratics				/5
8	Sketching graphs				/6
9	Functions				/7
10	Solving More Difficult Equations				/11
11	Triangles				/10
12	Applied Questions				/11



High Storrs School Mathematics Department

A-Level Bridging Unit – Assessment Task

This task has been designed to be used to assess what you can remember from GCSE. This is so that we can make the appropriate provisions for you, when you start in September. You must complete this assignment and submit it to your Mathematics Teacher at the **start of your first lesson**.

If you are struggling with some of these questions you should use available resources to revise / learn the relevant topics.

You might find these resources useful:

www.youtube.com You may find the 'Khan Academy' and 'hegarty maths' channels particularly useful

www.corbettmaths.com

<https://revisionmaths.com/gcse-maths-revision>

<http://www.mathsmadeeasy.co.uk/gcsemathsrevisionresources.htm>

There are many other good resources out there – find ones that suit you.

1 – Simplifying Like Terms

Simplify the following like terms

a) $2ac + 3ac^2 + 4ac^2$	b) $5y^4 \times 3y^6$
(1)	(1)
c) $20x^7y^4 \div 5x^4y^3$	d) $\left(\frac{4x^3}{3}\right)^2$
(2)	(2)

Mark: ____ /6

2 – Expanding Brackets

Expand and simplify where possible

a) $3(x + 5) - 4(2x - 6)$ (2)	b) $3(x + 4)(x - 2)$ (2)
c) $(x + 4)^2$ (2)	d) $(x - 3)^2 - 2x(x + 4)$ (2)

Mark: ____ /8

3 – Factorising an Expression

Factorise the following expressions fully

a) $16x^2 + 24xy^3$ (1)	b) $14x^3y^2 - 7xy^3 + 28xy^5$ (2)
c) $x^2 - 10x + 24$ (2)	d) $x^3 + 2x^2 - 8x$ (3)
e) $4x^2 - 9$ (2)	f) $4x^2 + 12x + 9$ (2)

Mark: ____ /12

4 – Laws of Indices for Rational Exponents

Evaluate the following, leaving your answers as **fractions not decimals**. Ensure that you show your working:
(you need to demonstrate that you can complete this exercise without a calculator)

a) 4^{-2} (1)	b) $4^{\frac{3}{2}}$ (2)
c) $32^{-\frac{3}{5}}$ (2)	d) $\left(\frac{36}{49}\right)^{-\frac{3}{2}}$ (2)
e) Simplify: $\left(\frac{a^3}{y^2}\right)^{-3}$ (2)	

Mark: ____ /9

5 – Manipulating Surds

Simplify the following surds, leaving your answers in the form $a\sqrt{b}$ where a and b are integers.

Do not calculate the exact answer.

a) $\sqrt{48}$ (1)	b) $4\sqrt{24}$ (1)
c) $\sqrt{50} - \sqrt{72} + \sqrt{18} - \sqrt{32}$ (2)	d) $\frac{27\sqrt{96}}{3\sqrt{3}}$ (2)

Mark: ____ /6

10 – Solving More Difficult Equations

Solve the following equations, some are linear and some are quadratic. They involve algebraic fractions so you should find these a little tougher...

a) $\frac{x-2}{3} + \frac{x-2}{2} = 25$

(2)

b) $x+5 = \frac{3}{x+3}$

(3)

c) $x-5 + \frac{4}{x} = 0$

(3)

d) $x - \frac{10}{x} = 3$

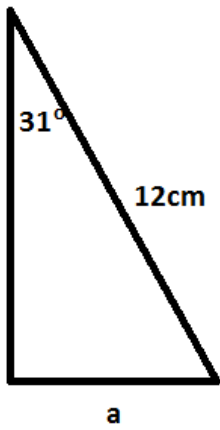
(3)

Mark: ____ /11

11 – Triangles

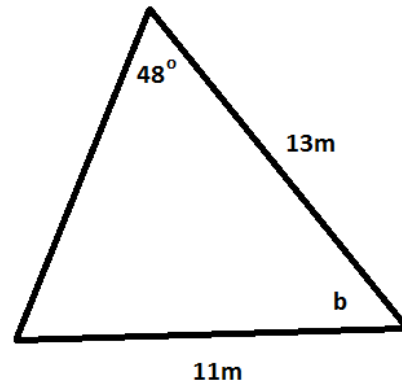
Calculate the values of a, b, c and d

a)



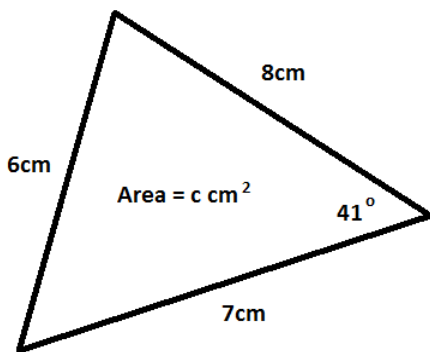
(2)

b)



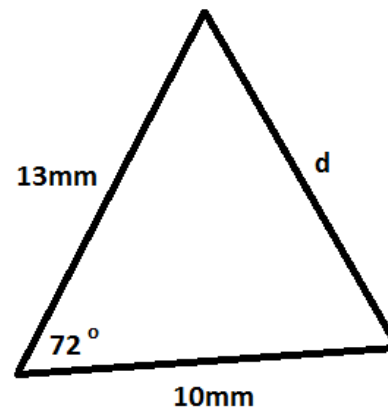
(2)

c)



(3)

d)



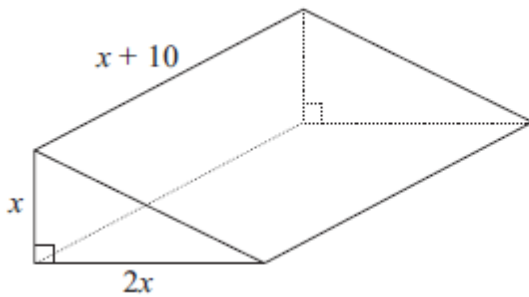
(3)

Mark: ____ /10

12 – Applied Questions

These questions involve applying the skills from the exercises above to solve problems. They often give the best indication of how prepared you are for A-Level questions.

a)

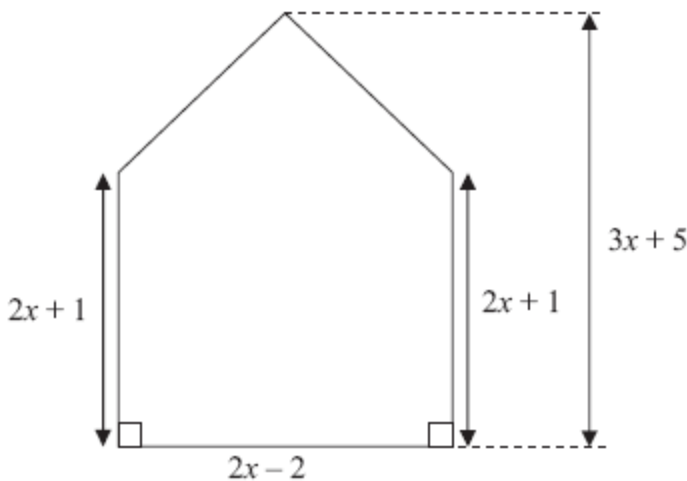


The diagram shows a solid triangular prism. All the measurements are in centimetres. The volume of the prism is $V \text{ cm}^3$.

Find a formula for V in terms of x . Give your answer in simplified form.

(3)

b)



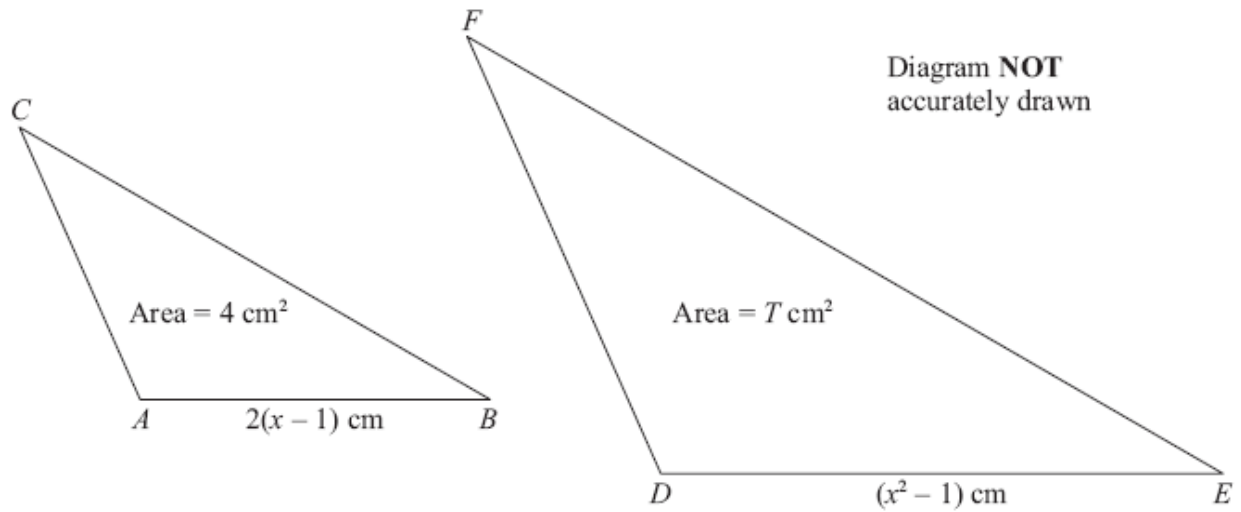
The diagram shows a pentagon.

All measurements are in centimetres.

Show that the area of this pentagon can be written as $5x^2 + x - 6$

(4)

c)



Triangles ABC and DEF are mathematically similar.

The base, AB , of triangle ABC has length $2(x-1) \text{ cm}$

The base, DE , of triangle DEF has length $(x^2-1) \text{ cm}$

The area of triangle ABC is 4 cm^2

The area of triangle DEF is $T \text{ cm}^2$

Prove that

$$T = x^2 + 2x + 1$$

(4)

Mark: ____ /11