



Candidate Name	
Current School	

Mathematics – Sample Assessment

Lower Sixth (Year 12)

Time allowed: 50 minutes

Please read this information before the examination starts

- You are expected to complete every question.
 - You are **not** permitted to use a calculator
 - Please show full working and leave all answers in their simplest terms
 - Answers without supporting work/calculations may score zero
 - Answers should be given as fractions or surds ($a\sqrt{b}$) wherever appropriate
 - Write your answers in pen or pencil **on this paper**. Additional sheets will not be marked.
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1) Calculate, giving your answers as fractions if necessary;

a) 49×28

b) $901 \div 17$

c) $83^2 - 17^2$ (there is a trick to make this easy so only answer this if you see it or have time!)

2) Simplify the following algebraic expressions

a) $3a^6 \times 2ab^2 \times 5b^3$

b) $10x - 8 + 2x - 17x + x + 5$

c) $\frac{z^2 \times z^8}{z^3} \div \frac{z^{12}}{z}$

3) Solve the following equations

a) $9p + 13 = 11$

b) $11 - 8(3g + 2) = 14$

c) $\frac{1}{6c} + \frac{5}{2c} = \frac{7}{3}$

d) $y^2 + y - 42 = 0$

4) Factorise $4s^2 + 7s - 15$

5) Solve the following pairs of simultaneous equations

a) $2a - b = 12$
 $6a + 2b = 21$

b)

$$2x + y = 1$$
$$x^2 + y^2 = 1$$

6) a) What is the mean of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{8}$ and $\frac{1}{6}$?

b) What is the median of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{8}$ and $\frac{1}{6}$?

7) A 6m long ladder is rested, on horizontal ground, against a vertical wall with the bottom of the ladder 3m from the base of the wall. Find:

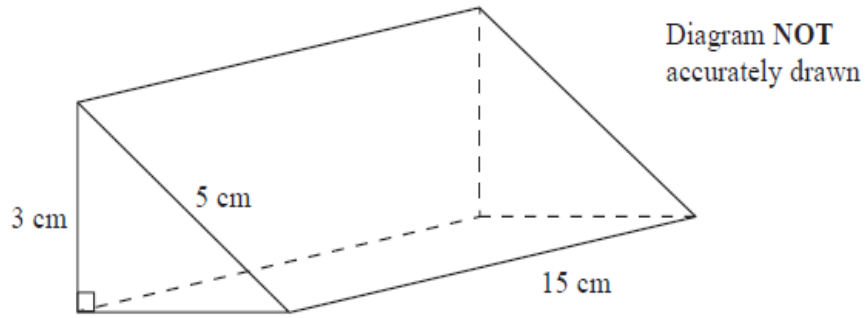
a) How far up the wall will the top of the ladder rest?

Give your answer in the form \sqrt{c}

b) If θ is the angle the base of the ladder makes with the horizontal what is the value of $\cos \theta$?

8) The sale price of a jumper is £ 23.20. If the reduction was 20%, what was the original price?

9)



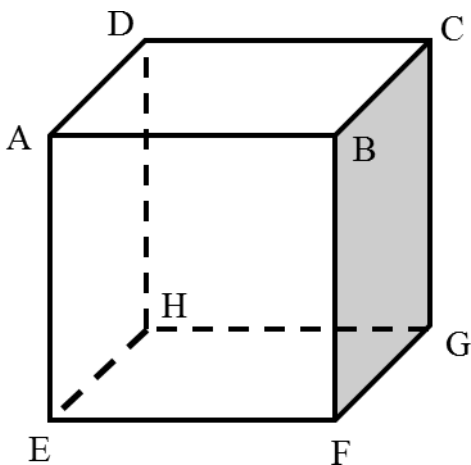
The diagram shows a prism which has a right-angled triangle as its cross-section

a) Calculate the total surface area of the prism (state the units used clearly)

b) Calculate the volume of the prism (state the units used clearly)

c) Convert your answer to part b in to mm^3

10) The cube ABCDEFGH has 4cm edges. What is the length of the line CE?
Give your answer in the form $a\sqrt{b}$ (where a and b are whole numbers and b is as small as possible)



11) A cup of tea costs x dollars and coffee is $x - \frac{1}{5}$ dollars

If 2 teas and 3 coffees cost \$5, find x . Give your answer as a Dollar amount correct to 2 decimal places.

12) Simplify $\frac{x^2 + 5x - 14}{6x^2 - 24}$

The exam finishes with 5 questions that require thinking but the content does not go beyond the curriculum contained in this paper.