



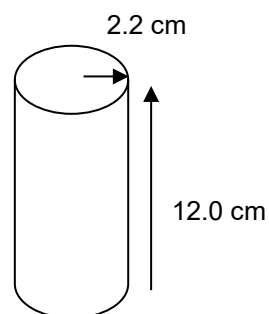
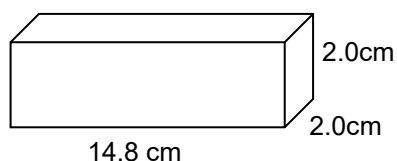
Summer Work 2026

Success in A Level Physics requires a good understanding of your Maths GCSE. Work through these tasks to practise using some of the key mathematical skills which will underpin your work next year.

Please show your workings for your calculations

Task 1: Areas and Volumes

For both shapes below, determine the surface area and volume:



Surface area = cm^2
Volume = cm^3

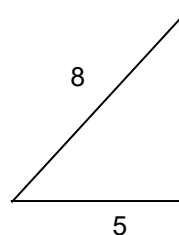
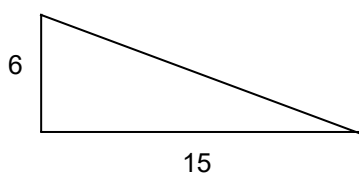
Surface area = cm^2
Volume = cm^3

Task 2: Pythagoras

Write down Pythagoras' Theorem as an equation:

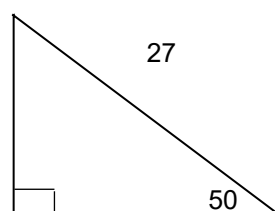
.....

Use this theorem to find the missing sides of the triangles below:



Task 3: Trigonometry

Calculate all of the missing sides and angles for the triangle:



Task 4: Standard Form and Prefixes

Write the following numbers in standard form and then with an appropriate prefix:

The first one has been done for you

- | | | |
|-------------------|---------------------------------------|-------------------|
| A) 3000000000000m | A)3.0 x 10 ¹¹ m..... | A)0.3Tm..... |
| B) 0.41m | B) | B) |
| C) 0.0000065m | C) | C) |
| D) 7000000m | D) | D) |
| E) 0.00038m | E) | E) |

Write the following in standard form and state the physical quantity that the unit corresponds to:

The first one has been done for you

- | | | |
|-----------|------------------------------------|--------------------|
| A) 4nA | A)4.0x10 ⁻⁹ A..... | A) ...current..... |
| B) 0.3GJ | B) | B) |
| C) 45TV | C) | C) |
| D) 0.08kN | D) | D) |
| E) 36Mm | E) | E) |

Task 5: Percentages

- A) You score 59 out of 70 marks in a test. What is your percentage?
- B) A 20W bulb has a power output of 12W. Calculate its percentage efficiency.

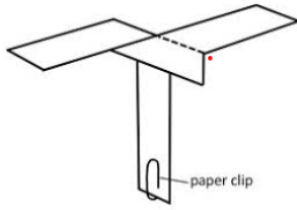
In experiments we use percentages to see how close our result is to the expected value. Using the example below to guide you, work through the questions that follow:

An experiment determines a value of 14Ω for a resistor. The manufacturer claims that it has a value of 15Ω. Calculate the percentage difference.

$$(15 - 14) \div 15 = 0.0667$$
$$0.0667 \times 100 = 7\%$$

- C) An experiment determines a value of gravitational field strength to be 8.67 N/kg. The accepted value is 9.81 N/kg. Calculate the percentage difference.
- D) An experiment determines a value of 215μF for a capacitor. The manufacturer claims that it has a value of 220μF. Calculate the percentage difference.

Task 6: Graphs



Students investigated how changing the number of paperclips added to a spinner affects the time it takes to fall.

- A) Plot a suitable graph of their data.
(You may use the grid supplied or your own graph paper)

- B) Draw in a straight line of best fit and determine the gradient.

Success in Physics also requires you to articulate your understanding of the system being studied...

Task 7: Applying Physics understanding to observation

Why does the spinner take less time to fall when carrying more paperclips?
(A force diagram could help your explanation)

[illegible]

