

I'm not robot!

Factorising Quadratic Expressions 3

Section A: Simplify then factorise the following quadratic expressions.

- | | |
|-------------------------|----------------------------|
| 1) $x^2 - 6x - 2x + 12$ | 6) $3a(a - 2) - 4a + 3$ |
| 2) $d(d - 5) - 84$ | 7) $5w(w - 2) - 4w - 3$ |
| 3) $b^2 + 2(b - 4)$ | 8) $3(6 - 5s) + s^2 + s^2$ |
| 4) $x^2 - 3(2x + 9)$ | 9) $3 - 2y(4y + 5)$ |
| 5) $c(c + 8) - 48$ | 10) $9x^2 - (x - 3)^2$ |

Section B: Factorise the following algebraic expressions.

- | | |
|------------------|------------------------|
| 1) $x^2 - 4$ | 13) $16s^2 - 9t^2$ |
| 2) $s^2 - 25$ | 14) $49w^2 - 100v^2$ |
| 3) $t^2 - 64$ | 15) $32p^2 - 18q^2$ |
| 4) $9 - y^2$ | 16) $48x^2 - 12y^2$ |
| 5) $49 - p^2$ | 17) $45a^2 - 125b^2$ |
| 6) $4q^2 - 121$ | 18) $72x^2 - 242y^2$ |
| 7) $81 - 25k^2$ | 19) $a^2b^2 - c^2$ |
| 8) $1 - 400d^2$ | 20) $9s - 4s^3$ |
| 9) $600v^2 - 6$ | 21) $(xy)^2 - 4z^2$ |
| 10) $a^2 - b^2$ | 22) $64t^4 - 16s^4$ |
| 11) $x^2 - 9y^2$ | 23) $(4x^2)^2 - 36y^2$ |
| 12) $4c^2 - d^2$ | 24) $27a^4 - 12b^2$ |

Extension: Using the difference of two squares factorise the following expressions.

- A. $4x^2 - (x - 2)^2$ B. $(2x + 1)^2 - (x - 4)^2$

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International Hazard Symbol	Hazard Symbol A	Name	Description

GCSE (9-1) Combined Science Formula Physics 1

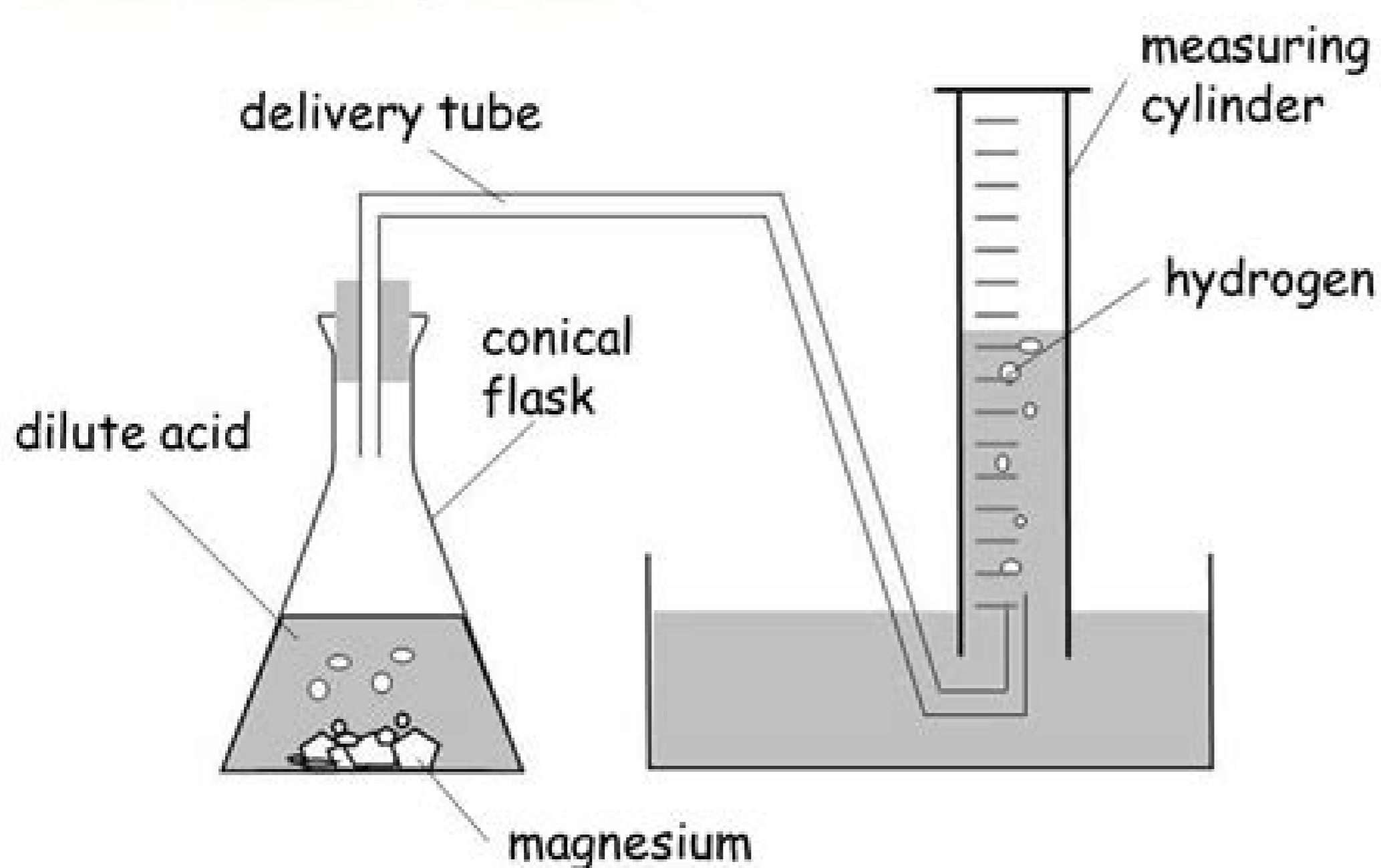
Students need to be able to recall....

CP1	distance travelled = average speed x time	$d = s \times t$
	acceleration = change in velocity ÷ time taken	$a = \frac{v - u}{t}$
CP2	weight = mass x gravitational field strength	$W = m \times g$
	force = mass x acceleration	$F = m \times a$
	momentum = mass x velocity (Higher)	$p = m \times v$
CP3	efficiency = (useful energy transferred by the device) / (total energy supplied to the device)	
	gravitational potential energy = mass x gravitational field strength x change in vertical height	$\Delta GPE = m \times g \times \Delta h$
	kinetic energy = $\frac{1}{2} \times \text{mass} \times (\text{velocity})^2$	$KE = \frac{1}{2} \times m \times v^2$
CP4	wave velocity = frequency x wavelength	$v = f \times \lambda$
	wave speed (velocity) = distance / time	$v = \frac{d}{t}$

Students may be asked to apply....

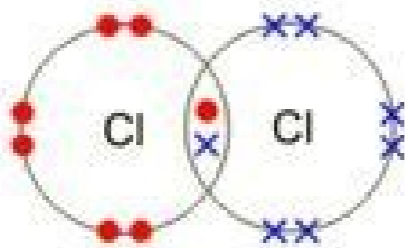
CP1	(final velocity) ² - (initial velocity) ² = 2 x acceleration x distance (Higher)	$v^2 - u^2 = 2 \times a \times x$
CP2	force = change in momentum ÷ time (Higher)	$F = \frac{\Delta mv}{t}$

An experiment to find out how the rate of reaction varies with concentration - does doubling the concentration really double the rate of reaction?



Covalent bonding

A non-metal metal and another non-metal can bond together by sharing electrons so that both electrons can achieve a full outer shell. This is called covalent bonding. To represent the atoms involved in the bonding we draw crosses for the electrons on one of the atoms and dots for the electrons on the other atoms as shown here.



Instructions

NB: It may be easiest to draw each atom out individually first to work out how many electrons will be shared

1. Draw the circles (outer shells) and overlap them (like a Venn diagram)
2. Write the symbols of the atoms involved in the middle of each circle
3. Draw the electrons for one atom as dots (o) and electrons for the other atom as crosses (x).
4. Any shared electrons are drawn in the overlapping section.
5. Count up the electrons for EACH atom and check that they each now have a full outer shell (2 electrons for the first shell and 8 for the next 2 shells)

TASK: Draw dot and cross diagrams for the following covalent compounds.

F ₂		CH ₄	
HCl		CO ₂	
H ₂ S		H ₂ O	
HF		NH ₃	

Challenge! - O₂

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Lots of the resources focus on differentiation and exam technique as I feel there is a profession-wide weakness in these areas.Last updated22 February 2018based on the AQA spec (reference included) - could be used for other boards. Total of 14 worksheets for the whole topic. Exam style questions with approximate 3 - 9 grades. The worksheets come in 2 levels of difficulty for differentiation (harder and easier/foundation). Each takes about 30 - 40 minutes. Answers in separate documents objectives: exam technique, maths, subject knowledge, scientific method good for: homework, part of a lesson, revision,cover, catch up sheet for absent students, part of an independent study if lesson time is short differentiation: two levels of difficulty - easier/foundation and harderTes paid licenceHow can I reuse this?Select overall rating(no rating)Your rating is required to reflect your happiness.Write a reviewUpdate existing reviewIt's good to leave some feedback.Something went wrong, please try again later.This resource hasn't been reviewed yetTo ensure quality for our reviews, only customers who have purchased this resource can review itReport this resource to let us know if it violates our terms and conditions. Our customer service team will review your report and will be in touch. 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