

Answer Guide

Please attempt all questions **without** a calculator.
The only sheet you may need a calculator for is the density section. (These have been included because they demonstrate the range of style of questions you could be asked in the exam.)



Year 11 – Paper 1 Revision Pack (Higher)

Friday 20th May 2021 - AM



How to use this revision pack

1. Review the list of topics that will appear on paper 1 of the summer exams. This can be found on the next page.
2. Work through the revision pages for each of the topics that will appear on the summer exams.
3. Use the electronic mark scheme to check your work and identify areas of weakness. The electronic mark scheme can be found on Teams and Satchel One.
4. Follow up with either:

A. Using the Hegarty Maths Clip Numbers to watch video tutorials on areas of weakness. You should then complete the quizzes on Hegarty to test whether you have closed your gap in knowledge.

OR

B. Follow the link for Maths Genie Exam Practice and search for the pack of questions relating to each topic (Mark Schemes Provided)

Each of these options is clearly labelled at the bottom of each page of revision.

5. You can also access whole past papers at <https://corbettmaths.com/2022/02/28/edexcel-gcse-higher-summer-2022/>
You should select Advanced Information – Paper 1 (Set A and Set B)
6. Email your class teacher if you have any questions or require further resources. Email Mr Lee if you need help during the school holidays.

Paper 1H – grouped by content area		Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Number (*see Ratio – some overlap of topic areas)		Percentages	Percentage of an amount
Fractions	Fraction of an amount	Ratio	Write as a ratio
	Fraction arithmetic		Use of ratio
	Recurring decimal to fraction		Share in a ratio
Properties	Product of prime factors		Ratio to fraction
	Negative and fractional indices	Proportion	Equations of proportion
Powers and roots	Simplification of surds	Compound Measures	Density
Standard Form	Conversion	Geometry and measures	
	Calculation	Angles	Angles in a polygon
Algebra		Length, area and volume	Area of a triangle
Manipulation	Simplification		Volume of a cube
	Expansion of brackets		Surface area of a cuboid
	Algebraic fractions		Area of a sector
Equations and inequalities	Linear inequality	Pythagoras's Theorem and Trigonometry	Pythagoras's Theorem
	Form an equation		Exact trigonometric values
	Quadratic equation	Vectors	Vector geometry
	Equation of a tangent to a circle	Probability	
Graphs	Quadratic graph	Probability	Probability
	Speed-time graph		Independent combined events
	Gradients of parallel and perpendicular lines	Statistics	
	Gradient of a curve	Diagrams	Cumulative frequency graph
		Measures	Mean
			Inter quartile range



Advanced Information – 1H
Non-Calculator

Section A: Number

Paper 1H – grouped by content area	
Number (*see Ratio – some overlap of topic areas)	
Fractions	Fraction of an amount
	Fraction arithmetic
	Recurring decimal to fraction
Properties	Product of prime factors
	Negative and fractional indices
Powers and roots	Simplification of surds
Standard Form	Conversion
	Calculation

Fraction of an amount

Find $\frac{3}{4}$ of 28.

21

Increase 28 by $\frac{3}{4}$

49

 $\frac{3}{4}$ of x is 33. Find x.

44

 $\frac{3}{4}$ of x is 12. Find $\frac{5}{4}$ of x.

20

FOLLOW-UP WORK

hegartymaths Clip 77

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
 Fractions of an Amount

Fraction Arithmetic

$$2\frac{3}{4} \times 1\frac{2}{7}$$

$$= \frac{99}{28} = 3\frac{15}{28}$$

$$2\frac{3}{4} + 1\frac{2}{7}$$

$$= \frac{113}{28} = 4\frac{1}{28}$$

$$2\frac{3}{4} - 1\frac{2}{7}$$

$$= 4\frac{1}{28} = 1\frac{13}{28}$$

$$2\frac{3}{4} \div 1\frac{2}{7}$$

$$= \frac{77}{36} = 2\frac{5}{36}$$

FOLLOW-UP WORK

hegartymaths

Clips
65-70 80
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
 Fractions

Recurring Decimals to Fractions

Convert $0.\dot{5}$ into a fraction

$$= \frac{5}{9}$$

Convert $0.5\dot{2}$ into a fraction

$$= \frac{47}{90}$$

Convert $0.5\dot{2}\dot{3}$ into a fraction

$$= \frac{259}{495}$$

Work out $0.2\dot{5} \times 0.\dot{5}$

$$= \frac{23}{162}$$

FOLLOW-UP WORK

hegartymaths

Clip 53,54

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Recurring Decimals to Fractions

Product of prime factors

Express 50 as a product of prime factors

$$50 = 2 \times 5^2$$

Express 96 as a product of prime factors

$$96 = 2^5 \times 3$$

Given that $40 = 2^3 \times 5$,

Express 80 as a product of prime factors

$$2^3 \times 5 \times 2 = 2^4 \times 5$$

Express 400 as a product of prime factors

$$2^3 \times 5 \times 10 = 2^4 \times 5^2$$

Given that $20 = 2^2 \times 5$,

What is the smallest number you can multiply 20 by to get a square number?

5

FOLLOW-UP WORK

hegartymaths

Clip
29 30 32 35

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Prime Factors, HCF & LCM

Indices

Work out:

$$(5x)^0 = 1$$

$$100^1 = 100$$

Work out:

$$25^{\frac{1}{2}} = 5$$

$$25^{\frac{3}{2}} = 125$$

$$25^{-\frac{3}{2}} = \frac{1}{125}$$

Work out:

$$4^{-2} = \frac{1}{16}$$

$$\left(\frac{2}{3}\right)^{-2} = \frac{9}{4}$$

Write the following in the form 4^n

$$16^3 \times 2^3$$

$$(4^2)^3 \times (4^{\frac{1}{2}})^3$$

$$4^6 \times 4^{1.5} = 4^{7.5}$$

FOLLOW-UP WORK

hegartymaths

Clip 104-110

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Fractional & Negative Indices

Standard Form

Write the following in standard form:

$$47\,000\,000 = 4.7 \times 10^7$$

$$300\,300 = 3.003 \times 10^5$$

$$0.0007 = 7 \times 10^{-4}$$

$$45 \times 10^4 = 4.5 \times 10^5$$

Work out:

$$(4.5 \times 10^7) \times (3 \times 10^4)$$

$$= 1.35 \times 10^{12}$$

$$(4.5 \times 10^7) \div (3 \times 10^4)$$

$$= 1.5 \times 10^3$$

Write the following in ordinary form:

$$4.5 \times 10^8 = 450\,000\,000$$

$$2.003 \times 10^4 = 20\,030$$

$$2 \times 10^{-5} = 0.00002$$

Work out:

$$(4.5 \times 10^5) + (3 \times 10^4)$$

$$= 4.8 \times 10^5$$

FOLLOW-UP WORK

hegartymaths

Clip 122-127

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Standard Form

Surds

Simplify $\sqrt{32}$

$$= 4\sqrt{2}$$

Work out $\sqrt{10} + \sqrt{40}$

$$= 3\sqrt{10}$$

Work out:

$$3\sqrt{5} \times 2\sqrt{2} = 6\sqrt{10}$$

$$3\sqrt{5} \times 2\sqrt{5} = 30$$

$$15\sqrt{21} \div 5\sqrt{3} = 3\sqrt{7}$$

Expand:

$$3\sqrt{2}(\sqrt{5} - 2\sqrt{2}) = 12 + 3\sqrt{10}$$

$$(\sqrt{5} + 6)(2\sqrt{5} + 7) = 52 + 19\sqrt{5}$$

Rationalise the denominator:

$$\frac{4 + 2\sqrt{5}}{3 + \sqrt{5}} = \frac{1 + \sqrt{5}}{2}$$

FOLLOW-UP WORK

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Clip 113-119

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
 Surds

Section B: Algebra

Algebra	
Manipulation	Simplification
	Expansion of brackets
	Algebraic fractions
Equations and inequalities	Linear inequality
	Form an equation
	Quadratic equation
	Equation of a tangent to a circle
Graphs	Quadratic graph
	Speed-time graph
	Gradients of parallel and perpendicular lines
	Gradient of a curve

Expansion of Brackets

Expand:

$$10(2 - x)$$

$$= 20 - 10x$$

Expand:

$$5(7 - 3x) - 4(2x - 7)$$

$$= 35 - 15x - 8x + 28$$

$$= 63 - 23x$$

Expand:

$$(2x - 5)(x + 7)$$

$$= 2x^2 + 9x - 35$$

Expand:

$$(4x + 1)(7 - 3x)(x + 1)$$

$$28x - 12x^2 + 7 - 3x$$

$$= -12x^3 + 13x^2 + 32x + 7$$

FOLLOW-UP WORK

hegartymaths

Clips 160-166

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
 Expanding and Factorising Brackets and Expanding and Factorising Quadratics

$$\begin{array}{r|rrr} & -12x^2 & +25x & +7 \\ x & -12x^3 & 25x^2 & 7x \\ 1 & -12x^2 & 25x & 7 \end{array}$$

Inequalities

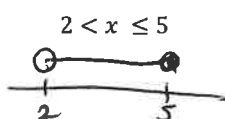
Solve $4x - 1 \geq 10$

$$x \geq \frac{11}{4}$$

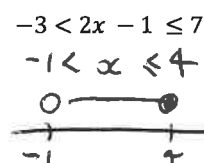
Solve $4x - 1 \geq 2x + 11$

$$x \geq 6$$

Represent the following on a number line:



Represent the following on a number line:



FOLLOW-UP WORK

hegartymaths

Clips 265-272

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
 Inequalities

Algebraic Fractions

Simplify:

$$\frac{15x+10}{25x-5} = \frac{3x+2}{5x-1}$$

$$\frac{x^2+10x+16}{x^2-64} = \frac{x+2}{x-8}$$

Simplify:

$$\frac{x^2+x-30}{4x+24} \times \frac{x+6}{x^2+8x+12}$$

$$= \frac{x-5}{4(x+2)}$$

Simplify:

$$\frac{3}{x+5} - \frac{2x}{x+3}$$

$$\frac{-2x^2 - 7x + 9}{(x+5)(x+3)}$$

Simplify:

$$\frac{3x+9}{7} \div \frac{x+3}{2}$$

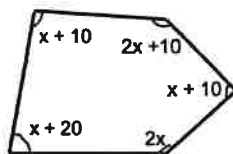
$$= 6/7$$

FOLLOW-UP WORK

hegartymaths

Clip 159,170,
172, 229
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Algebraic Fractions

Forming Equations



Find the size of the largest angle.

150

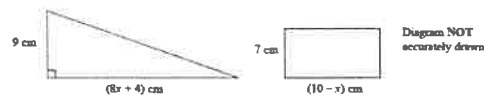
Given that

$$x-1 : 2x-3 = x+2 : 3x-2$$

Find the possible values of x .

$$x = 4 \text{ and } x = 2$$

The diagram shows a right-angled triangle and a rectangle.



The area of the triangle is twice the area of the rectangle.

(i) Write down an equation for x .

$$36x + 18 = 140 - 14x$$

(ii) Find the area of the rectangle.
Show clear algebraic working.

$$x = 2.44$$

52.92

FOLLOW-UP WORK

hegartymaths

Clip 176

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Forming & Solving Equations

Quadratic Equations

Solve:

$$x^2 - 10x + 16 = 0$$

$$x = 8 \quad x = 2$$

Solve:

$$x^2 - x - 6 = 0$$

$$x = 3 \quad x = -2$$

Solve:

$$x^2 = 5x + 24$$

$$x = 8 \quad x = -3$$

Solve:

$$2x^2 + 5x + 3 = 0$$

$$(2x+3)(x+1) = 0$$

$$x = -\frac{3}{2} \quad x = -1$$

FOLLOW-UP WORK

hegartymaths

Clip 230-234; 238-242; 244, 245

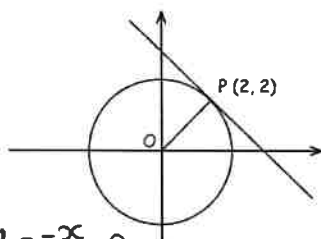
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Solving Quadratics

Equations of tangents to circles

a. Find the gradient of the line OP

2

b. Find the gradient of the tangent

 $-\frac{1}{2}$ The diagram shows the circle $x^2 + y^2 = 8$ with a tangent at the point (2, 2)

$$y - 2 = -\frac{1}{2}(x - 2)$$

$$2y - 4 = -x + 2 \rightarrow y = -\frac{x}{2} + 3$$

c. Find the equation of the tangent

d. Find the coordinates where the tangent crosses the x and y axis.

$$x \text{ axis: } x = 6$$

$$y \text{ axis: } y = 3$$

FOLLOW-UP WORK

hegartymaths Clip 320

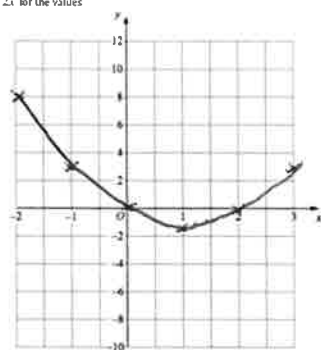
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Perpendicular Lines and the equation of a tangent

Quadratic Graphs

(a) Complete the table of values for $y = x^2 - 2x$

x	-2	-1	0	1	2	3
y	8	3	0	-1	0	3

(b) On the grid, draw the graph of $y = x^2 - 2x$ for the values of x from -2 to 3



b. Find the coordinates of the turning point

$(1, -1)$

c. Find the roots of $y = x^2 - 2x$

$x = 0 \quad x = 2$

d. Find an estimate to $x^2 - 2x = 6$

$x = -1.5$

FOLLOW-UP WORK

hegartymaths

Clip 251-257, 260

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Drawing Quadratic Graphs

Gradients of Parallel & Perpendicular Lines

Write down the gradient and y - intercept of:

Gradient

5

$y = 5x - 2$

y-intercept

$(0, -2)$

3

$y = 3x$

$(0, 0)$

-2

$y = 10 - 2x$

$(0, 10)$

-2

$2y + 4x = 12$

$(0, 6)$

Which equations are parallel to $y = 3x - 2$?

$y = 4x - 2$

$y = 2 + 3x$

$y = 5 - 3x$

$y - 3x = 1$

What is the perpendicular gradient of:

4 $-\frac{1}{4}$
-3 $\frac{1}{3}$

What is the perpendicular gradient of:

$-\frac{3}{2}$ $\frac{2}{3}$
 $\frac{4}{3}$ $-\frac{3}{4}$

FOLLOW-UP WORK

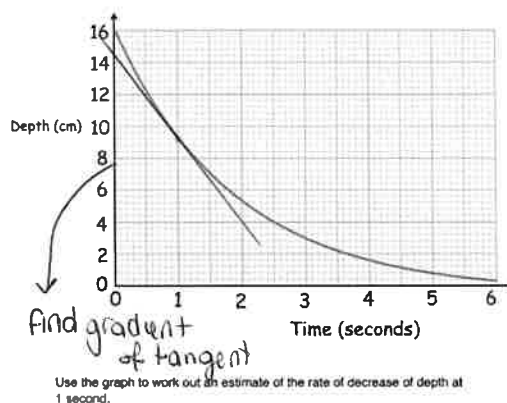
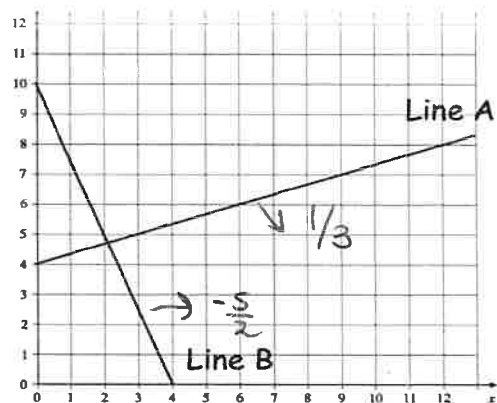
hegartymaths

Clip 214, 215

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Parallel and Perpendicular Lines

Gradient Under a Curve

Find the gradient of line a and b:



FOLLOW-UP WORK

hegartymaths

Clip 887-890

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Gradient of Lines and Velocity-Time Graphs

Section C: Ratio & Proportion

Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Percentages	Percentage of an amount
Ratio	Write as a ratio
	Use of ratio
	Share in a ratio
	Ratio to fraction
Proportion	Equations of proportion
Compound Measures	Density

Percentages of an amount

Find 32% of 160

51.2

Find 2.5% of 140

3.5

15% of a number is 30, What is the number

200

Find 145% of 60

87

FOLLOW-UP WORK

hegartymaths

Clip 84-86

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Percentages

Use of Ratio & Ratio as fractions

There are red and blue counters in a bag.

$\frac{3}{5}$

of the counters are red.

Write the ratio of red counters to blue counters.

3:2

Write 2:7 in the form 1:n

1:3.5

The ratio of red to blue counters is 3:1.
What fraction of the counters are blue?

$\frac{1}{4}$

$A:B = 3:4$ $B:C = 3:7$
Find the ratio of A:B:C

9:12:28

FOLLOW-UP WORK

hegartymaths

Clip 328-329;
335-338, 330

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Writing a Ratio as a Fraction or Linear Function

Sharing in a given ratio

Simplify the ratio

3 : 6 : 2

Divide £78 in this ratio.

18 : 36 : 24

Nathan, Ayesha, and Jordan share some money in the ratio 9 : 18 : 12

24

Ayesha gets £18 more than Nathan. How much does Jordan get?

£195

Nathan and Jordan have £105 together. What is the total amount?

FOLLOW-UP WORK

[hegartymaths](https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html)

Clip 332-335

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Ratio

Density

A piece of gold has a mass of 760 grams and a volume of 40 cm³.
Work out the density of the piece of gold.

19 g/cm³

A rock has a mass of 56 grams and a density of 3.5 grams/cm³.
Work out the volume of the rock.

16 cm³

Liquid A has a density of 1.2 g/cm³.
150 cm³ of Liquid A is mixed with some of Liquid B to make Liquid C.
Liquid C has a mass of 210 g and a density of 1.12 g/cm³.
Find the density of Liquid B.

0.8 g/cm³

100ml of liquid A and 200ml of liquid B are mixed together to make liquid C.
Liquid A has a density of 0.7 g/ml.
Liquid B has a density of 1.1 g/ml.
Work the density of liquid C.

1.03 g/ml

FOLLOW-UP WORK

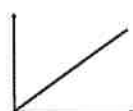
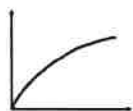
[hegartymaths](https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html)

Clip 725-733

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Speed & Density

Equations of Proportion

Match each graph to the correct relationship.



$$y \propto \frac{1}{x}$$

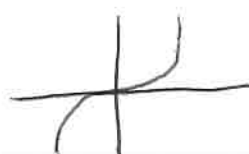
$$y \propto \sqrt{x}$$

$$y \propto x$$

Draw a graph to represent y being proportional to x^2



Draw a graph to represent y being proportional to x^3



FOLLOW-UP WORK

hegartymaths

Clip 343-347

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Direct & Inverse Proportion

Section D: Geometry

Geometry and measures

Angles

Angles in a polygon

Length, area and volume

Area of a triangle

Volume of a cube

Surface area of a cuboid

Area of a sector

Pythagoras's Theorem and Trigonometry

Pythagoras's Theorem

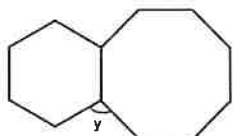
Exact trigonometric values

Vectors

Vector geometry

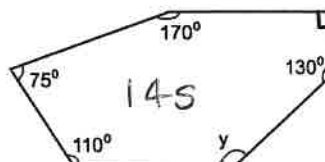
Angles in Polygons

The following shapes are regular polygons.
Find the value of y .



105

Find the value of y .



The sum of interior angles of a polygon is 7380° .
How many sides does the polygon have?

43

A regular polygon has an exterior angle of 45° .
How many sides does the shape have?

8

A regular polygon has an interior angle of 120° .
How many sides does the shape have? 6

FOLLOW-UP WORK

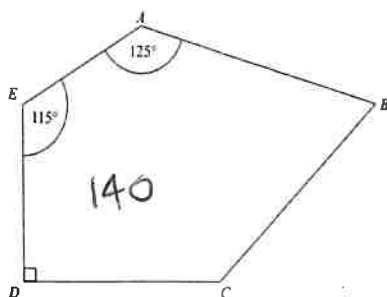
hegartymaths

Clips 560-565

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Angles in Polygons

Angles in Polygons

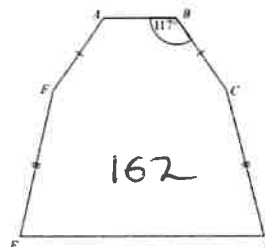
$ABCDE$ is a pentagon.



Angle $BCD = 2 \times$ angle ABC

Work out the size of angle BCD .
You must show all your working.

The diagram shows a hexagon.
The hexagon has one line of symmetry.



$FA = BC$
 $EF = CD$
Angle $ABC = 117^\circ$

Angle $BCD = 2 \times$ angle CDE

Work out the size of angle AFE .
You must show all your working.

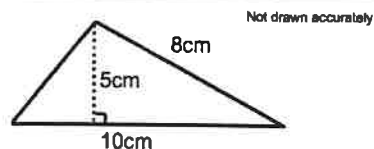
FOLLOW-UP WORK

hegartymaths

Clips 560-565

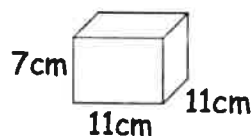
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Angles in Polygons

Area & Volume



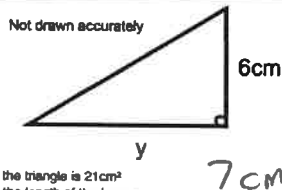
Calculate the area of the triangle.

$$25\text{cm}^2$$



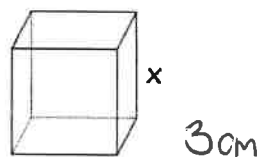
Work out the volume of this cuboid.
State the units of your answer.

$$847\text{cm}^3$$



The area of the triangle is 21cm^2 .
Calculate y, the length of the base.

$$7\text{cm}$$



The volume of the cube is 27cm^3 .
Find x.

$$3\text{cm}$$

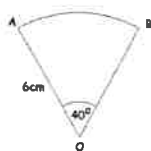
FOLLOW-UP WORK

hegartymaths

Clips 557-558;
568-569; 583

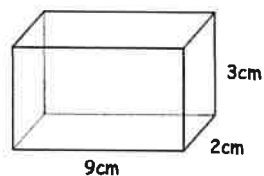
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Finding Area of any triangle and volume of prisms

Area of Sectors & Surface Area



Find the area of the sector.
Give your answer in terms of π .

$$(4\pi)\text{cm}^2$$



Work out the total surface area of the cuboid.

$$102\text{cm}^2$$

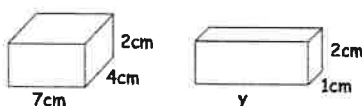
Shown below is a sector of a circle, with radius x cm.



The area of the sector is $18\pi\text{cm}^2$.
Find the length of x .

$$12\text{cm}$$

Shown below are two cuboids.



Both cuboids have the same surface area.
Find y.

$$16\text{cm}$$

FOLLOW-UP WORK

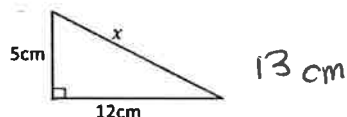
hegartymaths

Clips 546-547;
584, 589-590

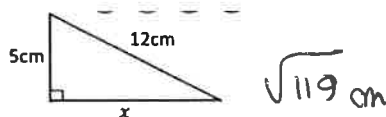
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Sector Areas & Arc Length and Surface Area

Pythagoras Theorem

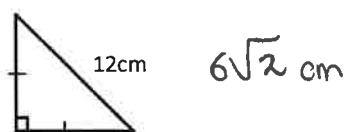
Find x .
Leave your answer in surd form if necessary



Find x .
Leave your answer in surd form if necessary



Find the length of the two missing sides.
Leave your answer in surd form if necessary.



Find the length of the line segment with endpoints (2,4) and (5,8)

5

FOLLOW-UP WORK

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Clips 497-507

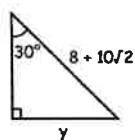
<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Pythagoras

Exact Trigonometric Values

YOU MUST LEARN THESE!!!

	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	-

Shown below is a right angled triangle.



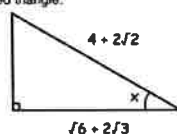
$$\sin 30 = \frac{y}{8 + 10\sqrt{2}}$$

$$\frac{1}{2}(8 + 10\sqrt{2}) = y$$

$$4 + 5\sqrt{2} = y$$

Find the exact length of the side labelled y .

Below is a right angled triangle.



$$\cos^{-1}\left(\frac{4 + 2\sqrt{2}}{4 + 2\sqrt{2}}\right)$$

$$= 30$$

Show that angle $x = 30^\circ$
Include all your working.

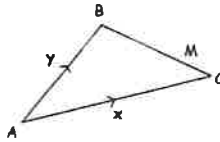
FOLLOW-UP WORK

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Clip 845

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Exact Trig Values

Vector Geometry



ABC is a triangle
M lies on BC such that $BM = \frac{1}{5} BC$
Express these vectors in terms of x and y

(a) \overrightarrow{BC}

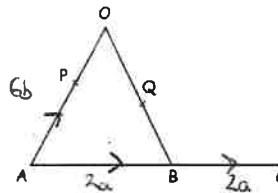
$$-y + x \quad (1)$$

(b) \overrightarrow{BM}

$$-\frac{4}{5}y + \frac{4}{5}x \quad (1)$$

(c) \overrightarrow{AM}

$$\frac{1}{5}y + \frac{4}{5}x \quad (1)$$



AOB is a triangle
P is a point on AO

$\overrightarrow{AB} = 2a$

$\overrightarrow{AO} = 6b$

$AP:PO = 2:1$

(a) Find the vector \overrightarrow{OB} in terms of a and b

$$-6b + 2a \quad (1)$$

Q is the midpoint of OB
B is the midpoint of AC

(b) Show PQC is a straight line

FOLLOW-UP WORK

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Clips 628-636

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Vectors

$$\begin{aligned} PQ &= 2b + \frac{1}{2}(-6b + 2a) \quad PC = -3b + 4a \\ &= 2b - 3b + a \\ &= -b + a \end{aligned}$$

$$PC = 4(PQ) \therefore \text{Straight line.}$$

Section E: Probability & Statistics

Probability	
Probability	Probability
	Independent combined events
Statistics	
Diagrams	Cumulative frequency graph
Measures	Mean
	Inter-quartile range

Independent Combined Events

Helen is taking part in a quiz on TV.
The probability she answers a question correctly is $\frac{4}{5}$

Helen is asked two questions

Calculate the probability she answers both questions correctly.

$$\frac{16}{25}$$

A fair six sided dice is rolled three times.

(a) Find the probability of getting a six all three times

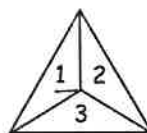
$$\frac{1}{216}$$

(2)

(b) Find the probability of getting no sixes.

$$\frac{125}{216}$$

A triangular spinner has three sections of equal size.



The spinner is spun twice.
A score is found by adding the two numbers together.

Find the probability of

(a) a score of 6

$$\frac{1}{9}$$

(2)

(b) a score of 5

$$\frac{2}{9}$$

(2)

FOLLOW-UP WORK

hegartymaths

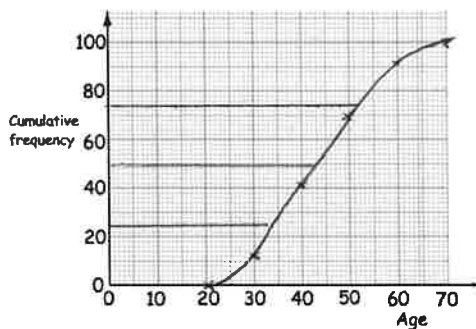
Clips 351-359

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Probability Trees

Age, x years	Frequency	Cumulative frequency
$20 < x \leq 30$	12	12
$30 < x \leq 40$	30	42
$40 < x \leq 50$	28	70
$50 < x \leq 60$	22	92
$60 < x \leq 70$	8	100

(a) Complete the cumulative frequency column in the table.

(1)



(b) Draw a cumulative frequency graph for this information.

(2)

Cumulative Frequency & IQR

c. Find an estimate for the median

Reading at 50th value
(will depend on graph)

d. Find an estimate for the interquartile range

75th value - 25th value

e. Estimate the fraction of the group who were over 55?

$$\approx \frac{19}{100}$$

FOLLOW-UP WORK

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Clips 437-440 412

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Cumulative Frequency and Boxplots

Mean

The mean of 4, 5, 7, 8, and x is 10.
What is the value of x ?

26

The mean of four numbers is 11.
If one number is removed and the mean is now 13,
What number was removed?

5

The mean of five numbers is 6.
If I add a sixth number, 12,
what is the new mean?

7

The average number of cars in 60 households in Corby is 3
The average number of cars in 40 households in Kettering is 2
What is the mean number of cars in the 100 households?

2.6

FOLLOW-UP WORK

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Clips 405-
408- 417-421

<https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html>
Averages