Answer Guide.

Please attempt all questions **with** a calculator.

Year 11 – Paper 2 & 3 Revision Pack (Foundation)

Paper 2: Tuesday 7th June 2022

Paper 3: Monday 13th June 2022

CORBY Technical School

How to use this revision pack

1. Review the list of topics that will appear on paper 2 and 3 of the summer exams. The booklet is divided into two parts; the first half is preparation for paper 2 and the second half is for paper 3.
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-foundation-summer-2022/ You should select Advanced Information – Paper 2 and 3 (Set A and Set B)
6. Email your class teacher if you have any questions.

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
	Negative number
Fractions	Fraction arithmetic
	Order fractions
Properties	Order integers
	Multiples
Approximation and Estimation	Rounding
	Error interval
Other	Mathematical symbols

Algebra	
Manipulation	Simplification
	Expansion of bracket
	Factorisation
	Laws of indices
Equations and inequalities	Linear simultaneous equations
Graphs	Coordinates
	Straight line graph
Functions	Number machines

Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Mass, time, area
	Scale drawing
Percentages	Decimal to percentage
	Percentage profit
	Depreciation

Ratio	Write as a ratio
	Use of ratio
Proportion	Direct proportion
	Currency conversion

Geometry and measures	
Shape	Polygons
	Circles
	Parallel and perpendicular lines
	Transformations
Angles	Angles in a triangle
	Vertically opposite angles
Length, area and volume	Area of a rectangle

Statistics	
Diagrams	Interpret graph
	Two-way table
	Frequency table
Measures	Mode
	Median
	Mean

Probability	
Probability	Tree diagram
	Combined events

Advanced Information – 2F Calculator

Section A: Number

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Money
	Negative number
Fractions	Fraction arithmetic
	Order fractions
Properties	Order integers
	Multiples
Approximation and Estimation	Rounding
	Error interval
Other	Mathematical symbols

Money

A badge costs 78p.
Sam has £5.
He buys as many badges as he can.

Work out the amount of change Sam should get from £5.
Give your answer in pence.

32 p

Mr Blair buys 30 pens, 30 rulers, 30 pencils and 30 calculators.

Price List

Pens	5 for 85p
Rulers	10 for £2.64
Pencils	6 for 52p
Calculators	£6.25 each

What is the total amount of money Mr Blair spends?

£203.12

FOLLOW-UP WORK hegartymaths Clips 743-754 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Negative Number

Work out

$5 - 14 = -9$

$-5 - 14 = -19$

$14 - (-5) = 19$

$-14 - (-5) = -9$

Work out

$-2 \times -3 = 6$

$-4 \times -8 = 32$

$(-25)^2 = 625$

$(-5)^3 = -125$

Work out

$-125 \div 5 = -25$

$-96 \div -4 = 24$

Here are four numbers.

-8 -2 2 8

Write one of these numbers in each box to make a correct calculation.

$\boxed{-8} - \boxed{2} = -10$

or $\boxed{-2} \quad \boxed{8}$

FOLLOW-UP WORK hegartymaths Clips 37-44 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Negative Numbers

Fraction Arithmetic

For these questions, you need to show your **full working out.**

$3\frac{2}{5} \times 1\frac{3}{4}$ $= \frac{119}{20} = 5\frac{19}{20}$	$3\frac{2}{5} \div 1\frac{3}{4}$ $= \frac{68}{35} = 1\frac{33}{35}$
$3\frac{2}{5} + 1\frac{3}{4}$ $= \frac{103}{20} = 5\frac{3}{20}$	*What number is halfway between* $\frac{2}{5}$ *and* $\frac{3}{4}$*?* $= \frac{23}{40}$

FOLLOW-UP WORK hegartymaths Clips 65-70 80 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Fractions

Ordering Numbers

Order the following numbers. *Start with the* ***smallest*** *number.* $8, 2, -4, 0, -7$ $-7, -4, 0, 2, 8$	*Order the following numbers.* *Start with the smallest number.* $\frac{2}{3} \quad \frac{3}{5} \quad \frac{7}{10}$ $\frac{3}{5}, \frac{2}{3}, \frac{7}{10}$
Order the following numbers. *Start with the* ***largest*** *number.* $5, -2, -1, 8, -125$ $8, 5, -1, -2, -125$	*Which fraction is closer to* $\frac{1}{2} = \frac{35}{70}$ $\left(\frac{21}{70}\right)\frac{3}{10}$ *or* $\frac{5}{7}\left(\frac{50}{70}\right)$ *Explain your answer.* $3/10$

FOLLOW-UP WORK hegartymaths Clips 14 37&60 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Writing, Simplifying and Ordering Fractions

Multiples

List the first five multiples of 8 8, 16, 24, 32, 40 *List the first five multiples of* 0.8 0.8, 1.6, 2.4, 3.2, 4	*Write down* ***all*** *the multiples of* 4 between 30 and 50 32, 36, 40, 44, 48
What is the ***next even*** *multiple of* 7 *after* 42? 56	*Multiples of a number are always larger than the number itself. Comment on this statement.* No as 1st multiple is the same as the number

FOLLOW-UP WORK hegartymaths Clip 33 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Factors & Multiples

Rounding

Round 45 384: *To the nearest* 10 45,380 *To the nearest* 100 45400 *To the nearest* 1000 45,000 *To the nearest* 10000 50,000	*Round to the nearest integer (whole number):* 5.627 6 0.573 1 29.999 30
Round 3.682 *To one decimal place* 3.7 *To two decimal places* 3.68	*Round to one significant figure:* 45 284 50 000 2.7446 3 0.00782 0.008

FOLLOW-UP WORK hegartymaths Clips 17, 56, 130 and 133 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Rounding

Error Intervals

A number that has been rounded to the nearest hundred is 500. Write this as an error interval. $450 \ldots \leq x < \ldots 550$	*A number that has been rounded to 2 decimal places is 1.46. Write this as an error interval.* $1.455 \ldots \leq x < \ldots 1.465$
A number that has been rounded to 2 significant figures is 2400. Write this as an error interval. $2350 \ldots \leq x < \ldots 2450$	*A number that has been* ***truncated*** *to 1 decimal place is 1.5. Write this as an error interval.* $1.5 \ldots \leq x < \ldots 1.6$

FOLLOW-UP WORK hegartymaths Clips 774-777 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Error Intervals

Mathematical Symbols

Complete the blank with either <, >, or = $4 \boxed{<} 6$ $-2 \boxed{>} -9$	*Complete the blank with either <, >, or =* $0.45 \boxed{>} 0.405$ $0.2 \boxed{>} 0.19$
Complete the blank with either <, >, or = $\frac{3}{4} \boxed{<} \frac{4}{5}$	*Complete the blank with either <, >, or =* $\frac{9}{15} \boxed{=} \frac{12}{20}$

FOLLOW-UP WORK hegartymaths Clip 14 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Section B: Algebra

Algebra	
Manipulation	Simplification
	Expansion of bracket
	Factorisation
	Laws of indices
Equations and inequalities	Linear simultaneous equations
Graphs	Coordinates
	Straight line graph
Functions	Number machines

Simplification was also in Paper 1. Please use your old booklet to revise this topic.

Expansion of Brackets

Expand:	*Expand*:
$4(x+7)$ = $4x + 28$	$x(x+7)$ = $x^2 + 7x$
$2(10-x)$ = $20 - 2x$	$4x(x+7)$ = $4x^2 + 28x$
$3(5x-2)$ = $15x - 6$	$4x(10-x)$ = $40x - 4x^2$
Expand and simplify:	*Expand and simplify*:
$4(10-3x)-2(x-4)$	$(x+5)(x-7)$
= $40 - 12x - 2x + 8$	= $x^2 - 2x - 35$
= $48 - 14x$	

FOLLOW-UP WORK hegartymaths Clips 160-161 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Expanding and Factorising

Factorisation

Factorise:	*Factorise:*
$10x + 25$ $5(2x+5)$	$x^2 + 25x$ $x(x+25)$
$15x - 9$ $3(5x-3)$	$2x^2y + 10xy$ $2xy(x+5)$
$3x + 6y - 15z$ $3(x+2y-5z)$	$4x^3 - 10x$ $2x(2x^2-5)$
Factorise:	*Factorise:*
$x^2 + 10x + 21$ $(x+7)(x+3)$	$x^2 - 10x + 21$ $(x-7)(x-3)$ $x^2 - 4x - 21$ $(x-7)(x+3)$

FOLLOW-UP WORK hegartymaths Clips 168-171; 223, 224 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Expanding and Factorising

Laws of Indices

Simplify:	*Simplify:*
$x^5 \div x^9$ $= x^{-4}$	$4x^9 \div 2x^3 = 2x^6$
$x^{-3} \times x^9$ $= x^6$	$5x^4 \times x^7$ $5x^{11}$
$(x^4)^5$ $= x^{20}$	$(2xy^4)^3$ $8x^3y^{12}$
Evaluate:	**Write $\frac{3^4 \times 3^5}{3^2}$ as a power of 3**
5^4 $= 625$	$\frac{3^9}{3^2} = 3^7$
5^0 $= 1$	

FOLLOW-UP WORK hegartymaths Clips 173, 174 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Indices

Simultaneous Equations

Solve the following simultaneous equations:

$5x + 4y = 18$
$3x + 4y = 6$

$x = 6$
$y = -3$

Solve the following simultaneous equations:

$4x - 2y = 16$
$3x + 4y = 23$

$x = 5$
$y = 2$

Solve the following simultaneous equations:

$5x - 2y = 8$
$6x + 3y = 42$

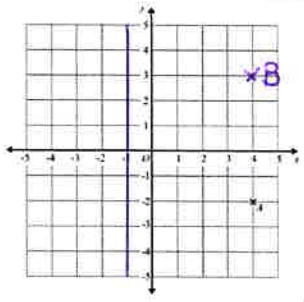
$x = 4$
$y = 6$

5 pens and 2 rulers cost £3.20. 6 pens and 3 rulers cost £4.20. How much does each item cost?

pens = 40p
rulers = 80p

FOLLOW-UP WORK hegartymaths Clips 190-195, 218-219 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Simultaneous Equations

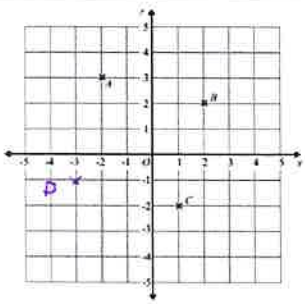
Coordinates



(a) Write down the coordinates of point A. (4, -2)

(b) On the grid mark with a cross (×) the point (4, 3). Label this point B.

(c) On the grid, draw the line with equation $x = -1$



(a) Write down the coordinates of point C. (1, -2)

(b) Find the coordinates of the midpoint of AB. (0, 2.5)

ABCD is a square.

(c) On the grid mark with a cross (×) the point D so that ABCD is a square.

FOLLOW-UP WORK hegartymaths Clips 199-200 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Coordinates

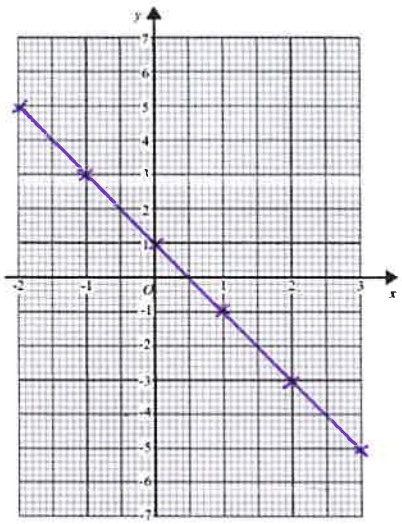
Straight Line Graphs

(a) Complete the table of values for $y = 1 - 2x$

x	-2	-1	0	1	2	3
y	5	3	1	-1	-3	-5

(c) Use your graph to find the value of y when $x = 0.4$

0.2



(b) On the grid draw the graph of $y = 1 - 2x$ for values of x from -2 to 3

FOLLOW-UP WORK hegartymaths Clips 205-210 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Drawing Graphs

Number Machines

Here is a number machine.

input → ÷4 → +5 → output

(a) Find the **output** when the **input** is 12 8

(b) Find the **input** when the **output** is 13 32

Input → +11 → ÷10 → Output

When the input is 9 the output is 2.

(b) Complete the number machine.

Here is a number machine.

Input → ×3 → −6 → Output

(a) What is the **output** when the **input** is 4? 6

(b) What is the **input** when the **output** is 15? 7

(c) Show that there is a value of the input for which the input and the output have the same value.

A rule to calculate a taxi fare is

£2.50 plus £2.20 per mile

(a) Work how much a 10 mile taxi journey would cost. 24.50

A taxi journey costs £20.10

(b) Work out distance of the journey. 8 miles

FOLLOW-UP WORK hegartymaths Clips 176-177 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Function Machines

$3x - 6 = x$

$2x - 6 = 0$

$2x = 6$

$x = 3$

Section C:
Ratio, Proportion & Rates of Change

Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Mass, time, area
	Scale drawing
Percentages	Decimal to percentage
	Percentage profit
	Depreciation
Ratio	Write as a ratio
	Use of ratio
Proportion	Direct proportion
	Currency conversion

Write as a ratio and **Use of Ratio** was also in Paper 1. Please use your old booklet to revise this topic.

Direct Proportion was also in Paper 1. Please use your old booklet to revise this topic.

Conversion (Mass, Time & Area)

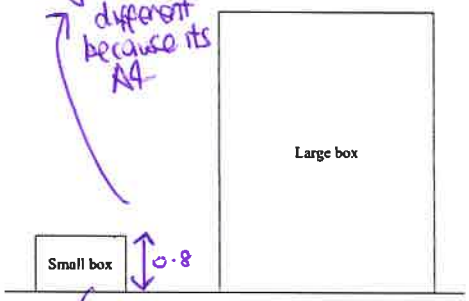
Convert the following:	*Convert the following:*
4.5*kg into g* 4500g 423*g into kg* 0.423kg 0.54*kg in g* 540g	4.5 *tonnes into kg* 4500kg
Convert the following:	*Convert the following:*
2.5m^2 *into* cm^2 25,000cm^2 27cm^2 *into* mm^2 2700mm^2	4 *hours and* 24 *minutes into a decimal* 4.4hours 2.$\dot{3}$*hours into hours and minutes* 2hours 20minutes

FOLLOW-UP WORK hegartymaths Clips 695-697; 700-701, 706, 709-711 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Conversion and Units

Scale Drawing

The accurate scale drawing shows a small box and a large box

yours will be different because its A4



The small box has a real height of 20 centimetres.

Find an estimate for the real height of the large box.

0.8cm ≡ 20cm

×4.625

3.7cm ≡ 92.5cm

A map has the scale of 1:50000

The distance between two points on the map is 10 cm.

Work out the real distance between the two points.
Give your answer in kilometres.

10 × 50000 = 500,000 cm
= 5000m

5 ..... km

FOLLOW-UP WORK hegartymaths Clip 864-874

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Scale Drawings

Percentages

Convert the following decimals to percentages:

0.4 40%

0.04 4%

0.455 45.5%

How do you represent a decrease of 12% as a multiplier?

88% = 0.88

How do you represent a decrease of 5% as a multiplier? 95% = 0.95

I buy a pack of 20 pens for £5.
I sell each of them for 30p. Work out my percentage profit.

$\frac{1}{5} \times 100 = 20\%$

A car costing £15,000 depreciates in value by 15% each year.
How much will it be worth after 3 years?

£9211.88

How many years does it take the are to half in value? 5

FOLLOW-UP WORK hegartymaths Clips 55; 760-761; 95

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Percentages; Percentage Change

Currency Conversion

The conversion rate between pounds and US dollars is £1 : $1.30

A hat costs $50. £38.46

What is this in pounds?

In a shop, the same hat is on sale for $80 or £60.

The shop writes the conversion rate as

£1 : $m $1.33

£60 : $80

What is the value of m?

In a shop, the same hat is on sale for $90 or £50.

The shop writes the conversion rate as

$1 : £n

$90 : £50 £0.5

What is the value of n?

The conversion rate between pounds and US dollars is £1 : $1.40

A hat costs £70 70 × 1.4 = $98.

What is this in dollars?

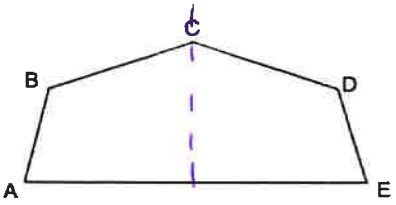
FOLLOW-UP WORK hegartymaths Clip707-708 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Exchange Rates

Section D: Geometry & Measures

Geometry and measures	
Shape	Polygons
	Circles
	Parallel and perpendicular lines
	Transformations
Angles	Angles in a triangle
	Vertically opposite angles
Length, area and volume	Area of a rectangle

Polygons



a. What is the name of the shape ABCDE.

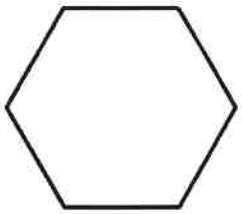
Pentagon

b. How many lines of symmetry does ABCDE have?

1

c. What type of angle is DEA?

Acute



The shape above is a regular polygon.

a. What is the name of the polygon?

Hexagon

b. How many lines of symmetry does the shape have?

6

c. What is the order of rotational symmetry?

6

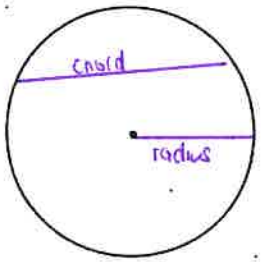
FOLLOW-UP WORK hegartymaths Clips 822-828 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Circles

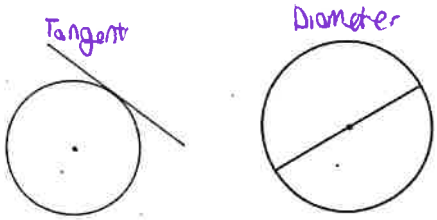
On the circle below, draw and label a:

chord

radius



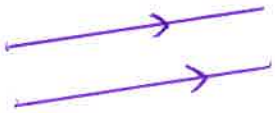
Write down the mathematical names for the straight lines in each of these two diagrams



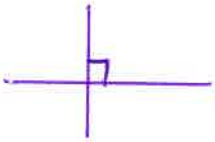
FOLLOW-UP WORK hegartymaths Clips 592 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Circles

Parallel & Perpendicular Lines

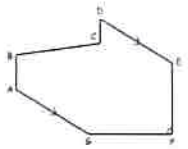
Draw two parallel lines.



Draw two lines perpendicular to each other.



The diagram below shows a shape ABCDEFG.



(a) What is the mathematical name given to ABCDEFG?

Heptagon (1)

(e) Which line is parallel to AG?

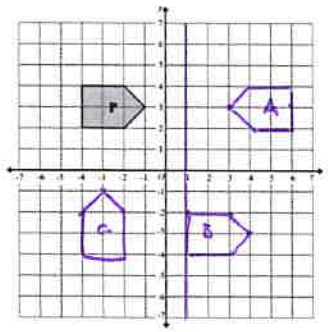
DE (1)

(f) Which line is perpendicular to EF?

GF (1)

FOLLOW-UP WORK hegartymaths Clip 821 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

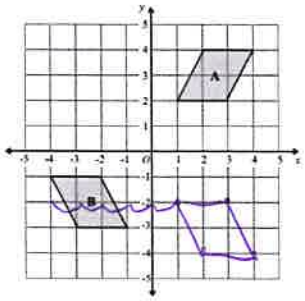
Transformations



(a) Reflect shape P in the line $x = 1$
Label the new shape A.

(b) Translate shape P by the vector $\begin{pmatrix} 5 \\ -6 \end{pmatrix}$
Label the new shape B.

(c) Rotate shape P by 90° anticlockwise, centre O
Label the new shape C.



Shape A is transformed to shape B by a reflection in the x axis followed by a translation $\begin{pmatrix} p \\ q \end{pmatrix}$
Find the value of p and the value of q.

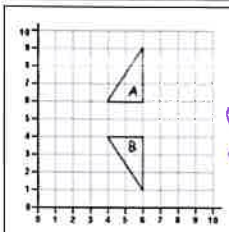
$p = -5$

$q = 1$

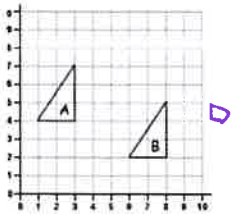
FOLLOW-UP WORK hegartymaths Clips 637-645; 648-654 https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html Transformations

Describing Transformations

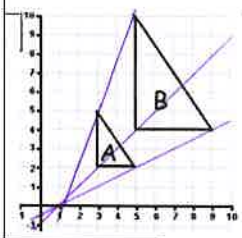
Describe what single transformation maps shape A to Shape B.



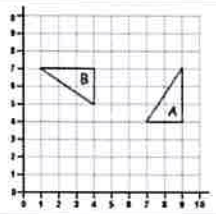
- Reflection
- line $y = 5$



- Translation
- $\begin{pmatrix} 5 \\ -2 \end{pmatrix}$



- Enlargement
- S.f 2
- Centre (1, 0)

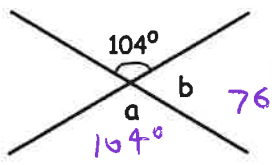


- Rotation
- 90° Anticlockwise (or 270° clockwise
- Centre (5, 3)

FOLLOW-UP WORK hegartymaths Clips 637-645; 648-654 https://www.mathsgenie.co.uk/gcse-may-june-2022-higher-topics.html Transformations

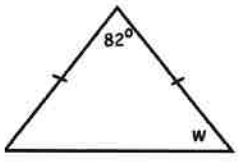
Angles Properties

Find a and b.



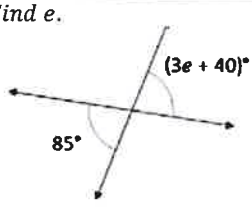
$a = 104°$ $b = 76°$

Find w.



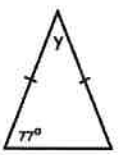
$w = 49°$

Find e.



$e = 15$

Find y.

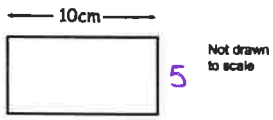


$y = 26°$

FOLLOW-UP WORK hegartymaths Clips 480; 484-491 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Angles

Area of a rectangle

Here is a rectangle with perimeter 30cm.



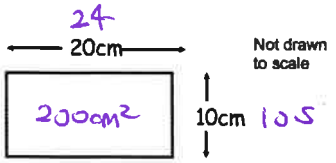
The length of the rectangle is 10cm.

Work out the area of the rectangle.

$50cm^2$

Shown below is a rectangle with length 20cm and width 10cm.

24



The length of the rectangle is increased by 20%.
The width of the rectangle is increased by 5%.

Find the percentage increase in the area of the rectangle.

252%

26%

FOLLOW-UP WORK hegartymaths Clips 553-555 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Area & Perimeter

Pictograms

The pictogram shows the amount of money raised by four tutor groups.

Key ○ = £10

Tutor group		Amount
S	○○○○○○	£60
T	○○○	£30
E	○○○○◐	£45
P	○○○◐	£35

(a) Complete the pictogram [4]

(b) How much money was raised in total?

170 [1]

The pictogram gives information about the number of emails Sami sent on each of five days last week.

Monday	□ □ □ ▯
Tuesday	□ □ □ □ □ ▱
Wednesday	□ □ □ □ □ □ ▯
Thursday	□ □ □ □ □ □ ▭
Friday	□ □ □ □ □ □ ▯ ▭

□ represents 8 emails

Work out the mean number of emails Sami sent on these 5 days.

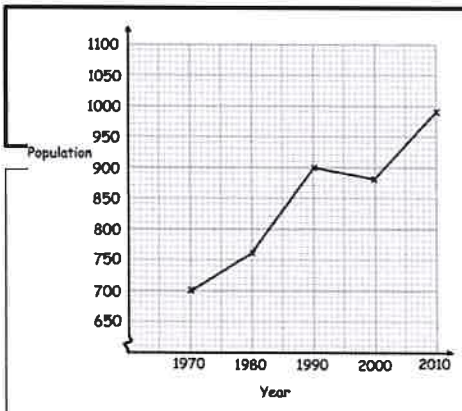
48.8

FOLLOW-UP WORK hegartymaths Clip 426 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Pictograms

Section E: Statistics

Statistics	
Diagrams	Interpret graph
	Two-way table
	Frequency table
Measures	Mode
	Median
	Mean

Interpret Graph



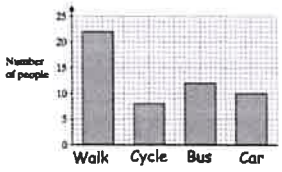
(a) What was the population in 1980? 760 (1)

(b) In which year was the population 700? 1970 (1)

The population is expected to increase by 120 by 2020.

(c) Work out the expected population in 2020. 1110

A manager surveys his employees to find out how they travel to work.



(a) What is the least popular method of transport? cycle (1)

(b) What is the most popular method of transport? walk (1)

(c) Calculate the total number of employees. 52 (2)

FOLLOW-UP WORK hegartymaths Clip 425-433; 450-454 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Two Way Tables

A football team played 38 games.
19 games were played at home and the rest were played away.

The team won a total of 21 games.
They drew 4 games away.
2 of the 10 games they lost were at home.

Copy and complete the two way table.

	Won	Drawn	Lost	Total
Home	14	3	2	19
Away	7	4	8	19
Total	21	7	10	38

100 students in year 7 either study French or German or Spanish.
45 of the students are boys and the rest are girls.

12 boys study German.
15 boys and 17 girls study French.
A total of 30 students study Spanish.

Work out how many girls study Spanish.

	F	G	S	Total
B	15	12	18	45
G	17	26	12	55
Total	32	38	30	100

12 girls study Spanish

FOLLOW-UP WORK hegartymaths Clip 424-424 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Two Way Tables

Mode and Median

Find the mode of:

4, 5, 4, 6, 6, 4, 3, 6, 8 4 and 6

red, blue, green, blue, yellow

blue

Find the median of:

5, 7, 10, 12, 15 10

5, 7, 8, 11, 12, 15 9.5

The table shows the ages of an under-21 rugby squad.

Age	Frequency
18	5
19	5
20	9
21	4

Find the mode. 20

Find the median. 20

FOLLOW-UP WORK hegartymaths Clips 404, 409, 415-416, 419-420 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Averages

Mean

Find the mean of: 4, 5, 4, 6, 6, 4, 3, 6, 7 5	*The mean of* 4, 5, 5, 6 *and* x *is* 7. *Find* x. 15
Jim ran a mean distance of 13.2*km in five days. The next day, Jim ran* 20*km. Find the mean distacne Jim ran in the six days.* 14.3	*Find the mean* The table shows the ages of an under-21 rugby squad. 19.52...

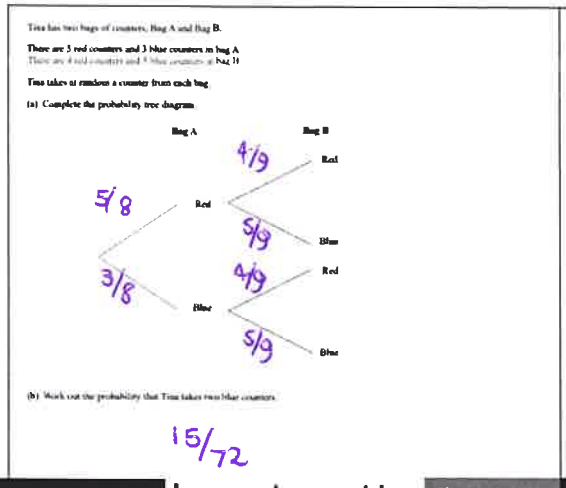
Age	Frequency
18	5
19	5
20	9
21	4

FOLLOW-UP WORK hegartymaths Clips 405-408,417, 419-420 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Averages

Section F: Probability

Probability	
Probability	Tree diagram
	Combined events

Tree Diagrams



Tina has two bags of counters, Bag A and Bag B.

There are 5 red counters and 3 blue counters in bag A

There are 4 red counters and 5 blue counters in bag B

Tina takes at random a counter from each bag.

(a) Complete the probability tree diagram.

Bag A

Bag B

5/8

Red

3/8

Blue

4/9

Red

5/9

Blue

4/9

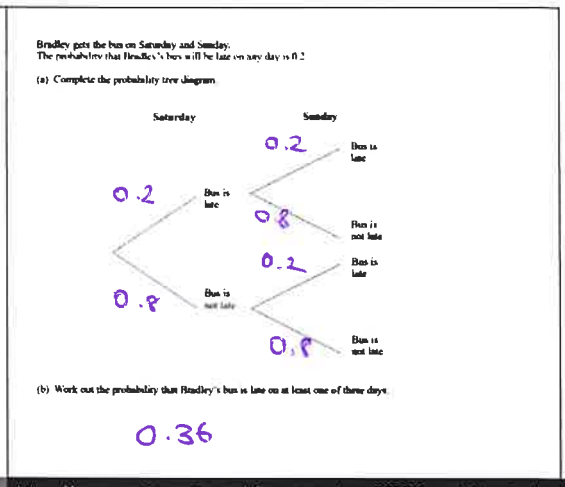
Red

5/9

Blue

(b) Work out the probability that Tina takes two blue counters.

15/72



Bradley gets the bus on Saturday and Sunday.

The probability that Bradley's bus will be late on any day is 0.2

(a) Complete the probability tree diagram.

Saturday

Sunday

0.2

Bus is late

0.8

Bus is not late

0.2

Bus is late

0.8

Bus is not late

0.2

Bus is late

0.8

Bus is not late

(b) Work out the probability that Bradley's bus is late on at least one of these days.

0.36

FOLLOW-UP WORK hegartymaths Clips 361-363

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Probability Trees

Combined Events

(a) Three cards are numbered 1, 3 and 4

Three discs are numbered 2, 4 and 5.

A game consists of picking one card at random and one disc at random.

The numbers on the card are subtracted from the numbers on the disc.

(i) Complete the table to show all the possible totals.

Card − Disc	2	4	5
1	-1	-3	-4
3	1	-1	-2
4	2	0	-1

(2)

(ii) What is the probability of getting a total which is an even number?

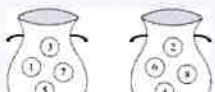
5/9

(2)

Two bags, *A* and *B*, each contain four numbered discs that are all the same size.

Bag A

Bag B



(a) A disc is drawn at random from bag *A* and a disc is drawn at random from bag *B*. A score is obtained by multiplying the numbers on the two discs. Complete the table to show all the possible scores.

Bag A × Bag B	1	3	6	7
2	2	6	10	14
4	4	12	20	28
6	6	18	30	42
8	8	24	40	56

(b) Find the probability of scoring less than 20.

9/16

FOLLOW-UP WORK hegartymaths Clips 358-360

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Four operations
	Negative number
Fractions	Fraction of an amount
	One amount as a fraction of another
	Equivalent fractions
Properties	Factors
	Lowest Common Multiple
Powers and roots	Square root
Approximation and estimation	Rounding
Other	Calculator use

Algebra	
Manipulation	Simplification
	Expansion of bracket
	Factorisation
	Substitute values
	Change subject of a formula
	Forming an expression
Equations and inequalities	Linear equation
	Form an equation
Sequences	Linear sequence

Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Time
	Compound units
	Scale drawing

Percentages	Percentage to fraction
	One quantity as a percentage of another
	Percentage decrease
	Reverse percentage
Ratio	Write as a ratio
	1 : *n* form
Proportion	Direct proportion
Compound measures	Average speed

Geometry and measures	
Shape	Triangle properties
	Quadrilaterals
	Triangular prism
Angles	Angle properties of parallel lines
	Angles in a triangle
	Vertically opposite angles
	Bearings
Length, area and volume	Area of a triangle
	Area of a trapezium
Pythagoras's Theorem and Trigonometry	Pythagoras's Theorem

Probability	
Probability	Probability scale
	Probability

Statistics	
Diagram	Frequency polygon
Measures	Median
	Range
Population	Comparison of distributions

Advanced Information – 3F Calculator

Section A: Number

Number (*see Ratio – some overlap of topic areas)	
Arithmetic	Four operations
	Negative number
Fractions	Fraction of an amount
	One amount as a fraction of another
	Equivalent fractions
Properties	Factors
	Lowest Common Multiple
Powers and roots	Square root
Approximation and estimation	Rounding
Other	Calculator use

These topics have been included in the previous revision booklet (paper 1) or in the first part of this booklet (paper 2).

Fractions

Write 12 *as a fraction of* 60.
Write your answer in its simplest form.

$\frac{12}{60} = \frac{1}{5}$

$\frac{4}{5} = \frac{28}{35}$

$\frac{6}{8} = \frac{24}{32}$

What fraction of an hour is 48 *minutes?*
Write your answer in its simplest form.

$48/60 = 4/5$

Is $\frac{2}{7}$ *or* $\frac{3}{8}$ *larger?*
Explain your answer clearly.

$\frac{16}{56}$ $\frac{21}{56}$

FOLLOW-UP WORK hegartymaths Clips 62, 59, 61 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Fractions

Factors & Multiples

Write all the factors of 24.

1, 2, 3, 4, 6, 8, 12, 24

Find the LCM of 18 *and* 28.
Hint*: *Use the Venn diagram method.

$18 = 2 \times 3 \times 3$
$28 = 2 \times 2 \times 7$

3 3 | 2 | 2 7

252

All numbers have an even number of factors.
Give an example to show that this statement is false.

No 25 (1, 5, 25)

Two bells ring at 9am.
One bell rings every 12 *minutes.*
The other bell rings every 22 minutes.
Find the next time the bells ring at the same tine.

2hours 12min

11.12am

FOLLOW-UP WORK hegartymaths Clips 27, 34-36 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Prime Factors, HCF and LCM

Calculator Use (Inc. Square Roots and rounding)

Work out $\frac{25.4 + 1.9^3}{6.5}$

Write down all the figures on your calculator display.

4.962923077

Use your calculator to work out $\frac{\sqrt{12.36 - 5.12}}{2.97^2}$

0.805039 7136

(a) Write down all the figures on your calculator display. (2)

(b) Write your answer to part (a) correct to 2 decimal places. (1)

0.31

Use your calculator to work out $\frac{12.74 + \sqrt{9.5}}{6.04 \times 4.1}$

0.6389196819

(a) Write down all the figures on your calculator display. (2)

(b) Write your answer to part (a) correct to 2 significant figures. (1)

0.64

Use your calculator to work out $\sqrt{\frac{\tan 80° + 1}{\tan 80° - 1}}$

1.195051466

(a) Write down all the figures on your calculator display. (2)

(b) Write your answer to part (a) correct to 3 significant figures. (1)

1.20

FOLLOW-UP WORK hegartymaths Clips 101; 129 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Using a calculator

Section B: Algebra

Algebra	
Manipulation	Simplification
	Expansion of bracket
	Factorisation
	Substitute values
	Change subject of a formula
	Forming an expression
Equations and inequalities	Linear equation
	Form an equation
Sequences	Linear sequence

These topics have been included in the previous revision booklet (paper 1) or in the first part of this booklet (paper 2).

Changing the Subject

Make a the subject of the formula: $y = aw + b$ $\frac{y-b}{w} = a$	*Make a the subject of the formula:* $y = \frac{a+5}{c}$ $yc - 5 = a$
Make a the subject of the formula: $y = b - 2a$ $2a = b - y$ $a = \frac{b-y}{2}$	*Make a the subject of the formula:* $y = 4a^2$ $\quad \sqrt{\frac{y}{4}} = a$ $y^2 + 4 = a$ $\quad y = \sqrt{a - 4}$

FOLLOW-UP WORK hegartymaths Clips 280-287 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Changing the Subject of a Formula

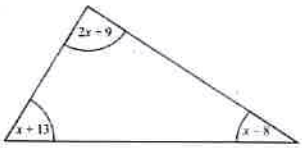
Linear Equations

Solve $4x - 1 = 22$ $x = 23/4$ or 5.75 *Solve* $5(3x + 2) = 100$ $x = 6$	*Solve* $\frac{3x}{4} + 2 = 8$ $x = 8$ *Solve* $\frac{3x+2}{4} = 3.5$ $x = 4$
Solve $4x - 1 = 2x + 9$ $x = 5$	*Solve* $10 - 3x = 2x - 5$ $x = 3$

FOLLOW-UP WORK hegartymaths Clips 176-186; 188-189 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Solving Equations

Forming an expression/equation

The sizes of the angles, in degrees, of a triangle are $2x + 9$, $x + 13$ and $x - 8$



Work out the value of x.

$x = 41.5$

Pens are sold in packs of 6. Pencils are sold in packs of 7.

I sold x packs of pens and y packs of pencils yesterday. Write an expression for the total number of pens and pencils solde

$6x + 7y = T$

Adam has some marbles. x
Bradley has twice as many marbles are Adam. $2x$
Chris has 5 more marbles than Bradley. $2x + 5$

In total they have 55 marbles. $x = 10$

How many marbles does Chris have? 25

There are x metres of wrapping paper. Write an expression for the amount of wrapping paper in cm.

$(100x)$ cm

FOLLOW-UP WORK hegartymaths Clips 151-153

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

Section C: Ratio, Proportion and Rates of Change

Ratio, proportion and rates of change (*see Number – some overlap of topic areas)	
Conversions	Time
	Compound units
	Scale drawing
Percentages	Percentage to fraction
	One quantity as a percentage of another
	Percentage decrease
	Reverse percentage
Ratio	Write as a ratio
	1 : *n* form
Proportion	Direct proportion
Compound measures	Average speed

These topics have been included in the previous revision booklet (paper 1) or in the first part of this booklet (paper 2).

Compound Units

Write 40m per second in km per hour 144km/h	*Write 4,000 kg/m^3 in g/cm^3* 4
Write 27km per hour in m per second 7.5m/s	*Write 11 g/cm^3 in kg/m^3* 11000

FOLLOW-UP WORK hegartymaths Clips 724, 731, 737, 738 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Compound Measures

Percentages

Convert the following percentages to fractions: (Give your answer in its simplest form) 45% 9/20 40.5% 81/200 6% 3/50 0.5% 1/200	*Write 15 as a percentage of 25* 60% *Write 17 as a percentage of 30* 56.6̇ *40 is x% of 200. What is x?* 20%

FOLLOW-UP WORK hegartymaths Clips 82, 62, 76 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Fractions, Decimals and Percentages

Reverse Percentages

The value of a house increased by 6%.
The house then had a value of £265 000

Work out the value of the house before the increase.

250,000

Mrs Reed buys a car costing £11760
This cost includes VAT at a rate of 20%

How much is the VAT?

£1960

In a sale, the normal price of a book is reduced by 20%.
The sale price of the book is £4.80

Work out the normal price of the book.

£6.00

There are 6000 people at an ice hockey match.
The announcer says this is exactly 40% more people that the previous match.

Explain why the announcer is incorrect.

6000 ÷ 1.4
= 4285.71...
Not possible - decimal number

FOLLOW-UP WORK hegartymaths Clip 96

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Reverse Percentages

Section D: Geometry & Measure

Geometry and measures	
Shape	Triangle properties
	Quadrilaterals
	Triangular prism
Angles	Angle properties of parallel lines
	Angles in a triangle
	Vertically opposite angles
	Bearings
Length, area and volume	Area of a triangle
	Area of a trapezium
Pythagoras's Theorem and Trigonometry	Pythagoras's Theorem

These topics have been included in the previous revision booklet (paper 1) or in the first part of this booklet (paper 2).

Shapes

What is the mathematical name of the triangles:

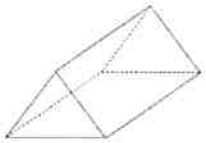
(a)  right angled triangle (1)

(b)  isosceles (1)

(c)  Scalene (1)

(d)  equilateral (1)

Below is a solid shape



What is the mathematical name for the shape?

Triangular prism (1)

Write down the number of vertices

6 (1)

Write down the number of faces

5 (1)

Write down the number of edges

9 (1)

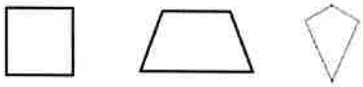
FOLLOW-UP WORK hegartymaths Clips 823-826; 829-830 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Shapes

The names of five quadrilaterals are given.

square rhombus rectangle kite trapezium

Three of them are drawn below.



A B C

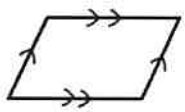
Complete these statements.

Shape A is called a Square

Shape B is called a Trapezium

Shape C is called a Kite

A quadrilateral is drawn below.
It has two pairs of parallel sides.



(a) Write down the name of this quadrilateral.

Parallelogram

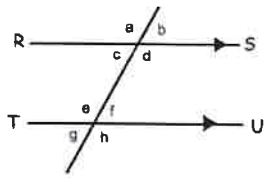
(b) How many lines of symmetry does the shape have?

0

(c) Draw a quadrilateral with two lines of symmetry

FOLLOW-UP WORK hegartymaths Clips 823-826; 829-830 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html

Angles in Parallel Lines



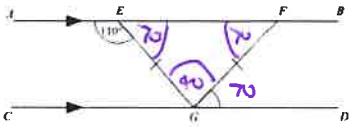
(a) Which angle is vertically opposite to angle *g*? f (1)

(b) Which angle is corresponding to angle *a*? e (1)

(c) Which angle is alternate to angle *c*? f (1)

(d) Which angle is corresponding to angle *h*? d (1)

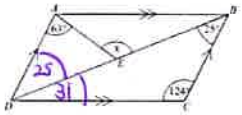
(e) Which angle is alternate to angle *d*? e (1)



AB and *CD* are parallel lines
EFG is an isosceles triangle

Angle *AEG* = 110°

Find the size of angle *FGD*. 70°



ABCD is a parallelogram.
Angle *DAE* = 63°
Angle *BCD* = 124°
Angle *CBD* = 25°

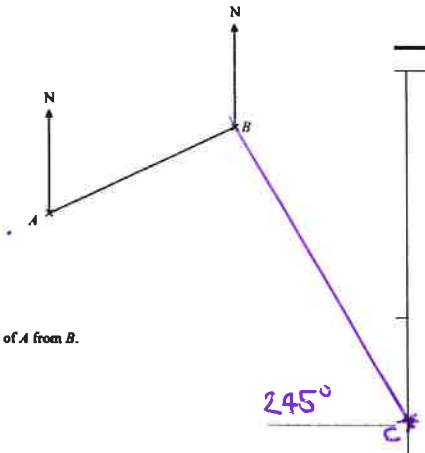
Calculate the size of angle *x*.
Give reasons for each stage of your answer. 88

FOLLOW-UP WORK hegartymaths Clip 481-

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Angles in Parallel Lines

Bearings

The accurate scale drawing shows the positions of point *A* and point *B*.
1 cm represents 100 m.



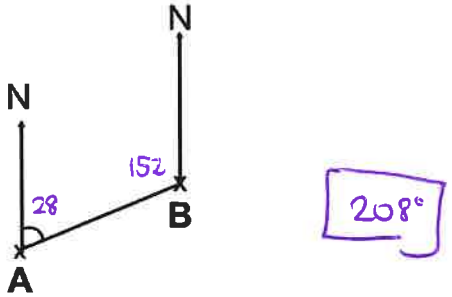
(a) Find the bearing of *A* from *B*.

4.5cm

Point *C* is 450 m from *B* on a bearing of 150°

(b) Draw point *C*, with a cross (×), on the diagram.

The bearing of point B from point A is 028°.
Find the bearing of A from B.



208°

Hint: It is not drawn accurately – use parallel line rules to solve this problem

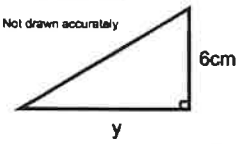
FOLLOW-UP WORK hegartymaths Clip 492-496

https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Bearings

Area of Triangles & Trapeziums

Shown below is a right-angled triangle.

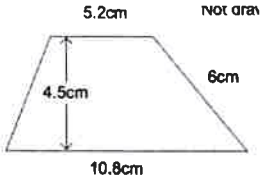
Not drawn accurately



The area of the triangle is 21cm²
Calculate y, the length of the base

7cm

Find the area of the trapezium

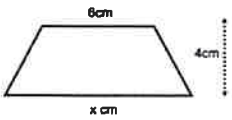


36cm²

The area of the trapezium is 63cm²

Work out the value of x.

7cm



The area of the trapezium is 34cm².

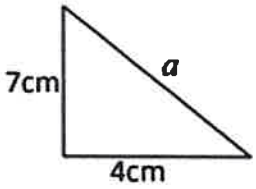
Work out the value of x.

11cm

FOLLOW-UP WORK hegartymaths Clip 557-559 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Area & Perimeter

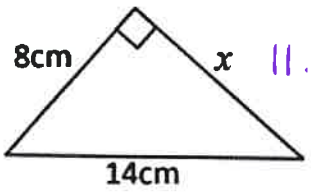
Pythagoras Theorem

Find the length of a



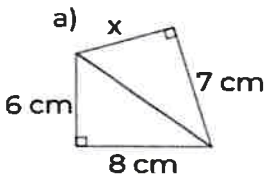
8.1cm

Find the area of the triangle



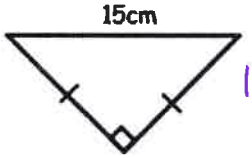
11.5cm

Find the length of x



7.1cm

Find the length of the two perpendicular sides.



10.6cm

FOLLOW-UP WORK hegartymaths Clip 498-499, 501, 502 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Pythagoras

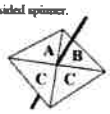
Section E: Probability

Probability	
Probability	Probability scale
	Probability

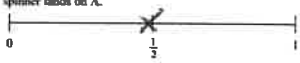
This topic has been included in the previous revision booklet (paper 1) or in the first part of this booklet (paper 2).

Probability Scale

Stevie spins a fair 4-sided spinner.



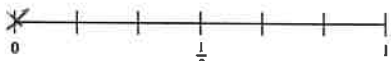
(a) On the probability scale mark with a cross (X) the probability that the spinner lands on A.



(b) Write down the probability that the spinner lands on C.

An ordinary fair dice is thrown once.

(a) On the probability scale mark with a cross (X) the probability that the dice lands on 10.



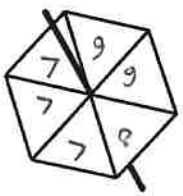
(b) Write down the probability that the dice lands on a number greater than 3. 1/2

Tony makes a fair six-sided spinner.
The spinner has the numbers 7, 8 and 9 on it.

The probability the spinner will land on 7 is greater than the probability that the spinner will land on 8.

The probability that the spinner will land on 9 is ½

Write the numbers on the spinner.



FOLLOW-UP WORK hegartymaths Clip 349-350 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html
Probability Scale

Section F: Statistics

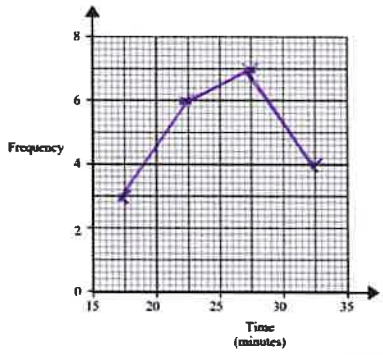
Statistics	
Diagrams	Frequency polygon
Measures	Median
	Range
Population	Comparison of distributions

This topic has been included in the previous revision booklet (paper 1) or in the first part of this booklet (paper 2).

The table below gives information about the time taken for 20 people to run 5 km.

Time (t minutes)	Frequency
$15 < t \leqslant 20$	3
$20 < t \leqslant 25$	6
$25 < t \leqslant 30$	7
$30 < t \leqslant 35$	4

Draw a frequency polygon to show this information.

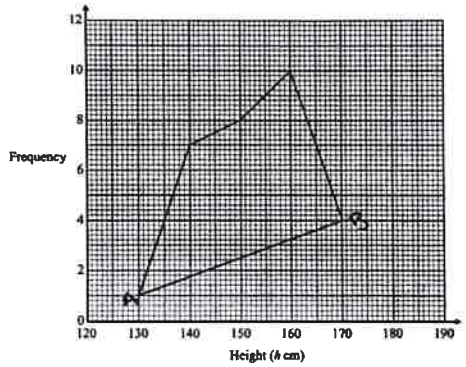


Frequency Polygons

The grouped frequency table gives information about the heights of 30 students.

Height (h cm)	Frequency
$130 < h \leqslant 140$	1
$140 < h \leqslant 150$	7
$150 < h \leqslant 160$	8
$160 < h \leqslant 170$	10
$170 < h \leqslant 180$	4

This incorrect frequency polygon has been dr



(b) Write down two things wrong with this incorrect frequency polygon.

Not plotted at midpoint
Connected first and last point

FOLLOW-UP WORK hegartymaths Clip 441 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Frequency Polygons

Range & Comparison of Distributions

Here are the weights, in grams, of 6 potatoes

150 129 125 133 144 105

(a) Work out the range. 45 (1)

(b) Work out the median weight. (2)

131

The range of test scores in year 9 was 35.
If the lowest score was 19, what was the highest score?

54

The table shows information about the heights, in cm, of a group of chimpanzees

least height	152 cm
median	164 cm
greatest height	168 cm

Range 16

This stem and leaf diagram shows information about the heights, in cm, of a group of 15 bonobo monkeys

15	7 9 9
16	4 5 7 7 8
17	0 3 4 4 7
18	0 3

Median 167
range 26

Key: 15 | 8 represents 158 cm

Compare the distribution of the heights of the chimpanzees with the distribution of the heights of the bonobo monkeys.

Hint: Compare Medians and Ranges

On average the bonobo monkeys were taller.
The chimpanzees were more consistent.

FOLLOW-UP WORK hegartymaths Clip 410, 414, 419-420, 432-43 https://www.mathsgenie.co.uk/gcse-may-june-2022-foundation-topics.html Averages