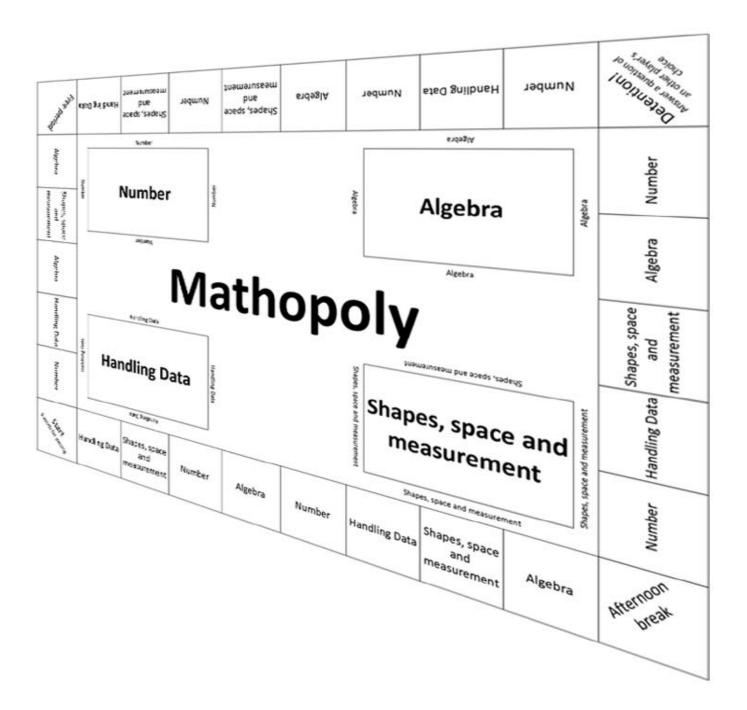
Mathopoly

Y9 Mathematics Revision Game







This booklet has been produced by the SAgE faculty office of Newcastle University. The contents of this booklet may be photocopied for class use. Reproduction or use of this booklet for commercial purpose is expressly forbidden. All materials are © University of Newcastle upon Tyne trading as Newcastle University.





Mathopoly

Y9 Mathematics Revision Game

Contents:

Teacher Guide		Page
	Introduction	4
	Resources	4
	Preparation	4
Rules		5
Bibliography		6
Appendix		7
	Score sheets	8
	Question cards	9
	Game Board	24





Teacher Guide

Introduction

This booklet contains all the information and many of the resources needed to play Mathopoly.

This maths revision game is intended for use as a fun revision session for year 9 students. It covers the topics examined in year 9: numbers; algebra; shape, space and measurement; and handling data. However, it is not all encompassing of the year 9 curriculum.

The game is to be played in groups of 4 or 5.

The game should be completed within a one hour lesson, but may be shorted if necessary.

The questions cover levels 5 to 8. All level 8 questions are marked and, if necessary, can be removed from the game, depending on the ability of the group.

The score sheets include a column for the students to record the topics of questions they have answered, in order to assess their strengths and weaknesses.

Resources

Included in booklet to print

Game board Question cards Score Sheet

To be provided by school

Jotting paper x n° of students playing Place markers x n° of students playing Felt pens Dice x 1 Calculators

Please ensure that the felt pens are the same colour as the place markers.

Preparation

Print the following:
Game board (on A3 if possible, if not print question cards A5)
Set of question cards
Score sheet x n° of students playing
Rules

Cut out question cards and score sheets.

Separate the question cards into subjects and lay face down on the game board.







Rules

Each player starts with 50 points.

Each player chooses a place marker and places it on the start square.

The player with the highest role goes first.

The first player roles the dice and moves the indicated number of spaces.

The player then answers a question on the topic of that square.

The question is read by another player who does not own the square.

If the player answers correctly they receive the number of points on the card and own the square.

Ownership of a square is notated by drawing a dot of the same colour of the owners place marker on the square.

If the player answers incorrectly the number of points on the card are deducted from the player.

If the square is not owned and the player answers incorrectly the square remains not owned.

If the square is owned and the player answers incorrectly the owner of the square may answer the question. If the owner answers correctly they receive the points on the card. If the owner answers incorrectly no points are deducted.

If a player lands on a square which they own no points are deducted for an incorrect answer.

Game play continues until all but one of the players are bankrupt, that is have 0 points, or an agreed target score has been reached by one of the players.





Bibliography

Mapp, F. C. (2006) KS3 Success Revision Guide Mathematics SATs Levels 5-8; London: Letts Educational





Appendix





Score Sheet

Name: Marker colour:		
	oints	Topic
50		Τορία
-	JU	
<u> </u>		

Name: Marker coloui	r:	
Points Topic		
50	Τοριο	
30		
 		
 		





Question Cards

Number	Number
Name all the factors of 32.	Name all the factors of 100.
1, 2, 4, 8, 16, 32	1, 2, 4, 5, 10, 20, 25, 50, 100
Score: 3	Score: 2
Number	Number
What is the definition of a prime number?	Name all the prime numbers between 10 and 20?
A prime number is a number with only two factors, 1 and itself.	11, 13, 17, 19
Score: 3	Score: 4
Number	Number
What is the reciprocal of $\frac{5}{6}$?	What is the highest common factor?
$\frac{6}{5} = 1\frac{1}{5}$	The highest common factor is the highest factor that two numbers have.
Score: 3	Score: 3
Number	Number
What is the lowest common multiple of 6 and 8?	What are the first 4 squared numbers?
24	1, 4, 9, 16
27	
Score: 4	Score: 3





Number	Number
What number is raised to the power 2 to give 36?	What is a cubed number?
g. 10 00.	A number raised to the power 3.
6	·
Score: 2	Score: 3
Number	Number
Arrange these numbers from smallest to largest; -9, 4, 7, -2, 0, 3.	If I multiply a positive number and a negative number what result do I get?
-9, -2, 0, 3, 4, 7	A negative number.
Score: 1	Score: 3
Number	Number
If I multiply a negative number and a	What is -18 ÷ (-3)?
negative number what result do I get?	
A positive number.	6
A positive number.	
Score: 3	Score: 4
Number	Number
What is -9 x 2?	What is -2 -5?
-18	-7
Score: 4	Score: 3





Number What is 0.6 ÷ 10?	Number What is 75 x 1000?
0.06	75000
Score: 4	Score: 2
Number	Number
What is $\frac{3}{4} + \frac{1}{2}$, express as a mixed number. $1\frac{1}{4}$	What is $\frac{4}{6} + \frac{2}{3}$?, express as an improper fraction.
	$\frac{8}{6}$
Score: 4	Score: 3
Number	Number
What is $\frac{5}{7} - \frac{2}{7}$?	In a basket of 20 apples $\frac{3}{4}$ are red. How many apples are red?
$\frac{3}{7}$	15
Score: 2	Score: 4
Number	Number
In a bag of balls there are red, green and	What is 5.776 to 2dp?
yellow balls. $\frac{1}{6}$ of the balls are red, $\frac{2}{3}$ of the balls are green. What fraction are yellow?	5.78
1/6 Score: 5	Score: 3





Number	Number
What is 3 x 0.1?	Put these numbers order of size from biggest
0.3	to smallest; 4.45, 2.34, 3.67, 2.56, 4.32.
0.5	4.45, 4.32, 3.67, 2.56, 2.34
Score: 2	Score: 3
Number	Number
Find 45% of £670	Express $\frac{18}{20}$ as a percentage.
£301.50	90%
Score: 5	Score: 3
Number	Number
Express $\frac{56}{80}$ as a percentage.	My house is now worth 10% more than
80 ds d percentage.	when I bought it. I bought it for £120,000,
70%	what is it worth now?
	£132,000
	Score: 5
Score: 4	566.6.5
Number	Number
My car decreased in value by 4% each year	A shop keeper bought a bag of potatoes for
that I owned it. I bought it in 2002 for £3000	£1.15, he then sold them for £2.25. What
how much did I sell it for in 2006?	was his percentage profit?
£2548.04	95.7%
Score: 5	Score: 5





Number	Number
Express $\frac{1}{3}$ as a percentage.	Express 0.125 as a percentage.
33.3%	12.5%
Score: 3	Score: 2
Number	Number
Express 37.5% as a fraction.	What is 3 + (5 - 3)?
$\frac{3}{8}$	5
Score: 5	Score: 3
Number	Number
What is 4 + 6 x 5?	I need 45m of wood. I can by the wood in lengths of 4m, how many lengths do I need to buy?
	12m
Score: 3	Score: 4
Number	Number
In a class there are 12 boys and 18 girls. Express the class as a ratio.	For every 2 blue tee-shirts, I have 3 green tee-shirts. If I have 6 blue tee-shirts how many green tee-shirts do I have?
2:3	
	9





Number The brand of soap power I want to buy comes in two sizes. I can buy 800g for £5.30 or I can buy 500g for £3.65. Which option represents the best value for money? The 800g box.	Number The cake recipe that I have gives enough cake for 3 people, but I need a cake for 7 people. The recipe calls for 150g of flour, how much do I need to make a cake for 7 people? 350g
Score: 5 L8 Number What is 3.56 ⁰ ?	Score: 5 Number What is 4 ¹ ?
1	4
Score: 4 Number Express 4 ⁷ x 4 ⁵ in indices form.	Score: 3 L8 Number Write 0.00876 in standard form
4 ¹² Score: 3	8.76x10 ⁻³ Score: 3
Number What is 4.878 x 10 ³ ? 487.8	Number What is 4.32 x 10 ⁻³ ? 0.00432
Score: 3	Score: 4





Algebra	Algebra
Expand the brackets 4(ad + d) + a(d+3f)	Solve the inequality $5 - x \le 3x + 2$
5ad + 4d + 3af	$x \le \frac{3}{4}$
Score: 4	Score: 4
Algebra	Algebra
Danielle has s number of shoes. Rachael has	Simplify 5a +2a – 7b.
3 times as many necklaces, write a formula to express this.	7a – 7b
S = 3n	
Score: 3	Score: 2
Algebra	Algebra
Simplify 3n x 4m.	If a = 2, n = 6, f = 0.5,
12nm	Find the value of f(12a – 3n).
12	3
Score: 3	Score: 4
Algebra	Algebra
Expand the brackets 3(d+2a).	Expand the brackets (x+2)(x+4).
3d + 6a	$x^2 + 6x + 8$





Algebra	Algebra
Expand the brackets (y+3) ² .	Factorise 6j + 18.
y ² + 6y + 9	6(j+3)
y + 6y + 9	σ(j+3 <i>)</i>
Score: 5	Score: 2
Algebra	Algebra
Factorise x ² -16.	Make k the subject of the formula
(x-4)(x+4)	$j = \frac{k}{2a} + 5.$
	k = 2a(j - 5)
Score: 5	Score: 4
Algebra	Algebra
Solve the equation $4(2x + 1) = 20$.	Solve the simultaneous equations:
301Ve the equation 4(2x + 1) = 20.	2a – 4b = 2
x = 2	6a – 10b = 8
	a = 3, b = 1
Score: 4	Score: 4
Score. 4	Score. 4
Algebra	Algebra
Name this common number pattern: 1, 1, 2, 3, 5, 8, 13	Solve the inequality $3(2x - 7) > -3 + 5x$.
, , , , , , , , , , , , , , , , , , , ,	x > 18
Fibonacci sequence	
Score: 4	Score: 4





Algebra

Find the nth term of the sequence: 6, 10, 14, 13, 16...

4n + 2

Algebra

Find the nth term of the sequence: 4, 10, 20, 34, 52...

 $2n^2 + 2$

Score: 4

Score: 5

Algebra

Sketch an x² graph.



Algebra

Sketch a $-x^2$ graph.



Score: 3

Score:4

L8

Algebra

Sketch an x³ graph.



L8

Algebra

Sketch a $\frac{1}{x}$ graph.



Score: 5

Score: 5

Shape, space and measurement

How many sides does a pentagon have?

5

Shape, space and measurement

How many lines of symmetry does a regular hexagon have?

6

Score: 2



Score.





Shape, space and measurement	Shape, space and measurement
What size are the angles in an equilateral triangle?	How many angles are equal in an isosceles triangle?
60°	2
Score: 2	Score: 2
Shape, space and measurement	Shape, space and measurement
What is a chord?	What is an arc?
A chord is a straight line that joins two points on the circumference.	An arc is a part of the circumference.
Score: 4	Score: 3
Shape, space and measurement	Shape, space and measurement
What is the formula linking radius and diameter?	What is an acute angle?
d = 2r	An angle between 0° and 90°
Score: 4	Score: 3
Shape, space and measurement	Shape, space and measurement
What is a reflex angle?	Finish the sentence:
An angle between 180° and 360°	Angles at a point add up to
200 200	360°
Score: 3	Score: 4





Shape, space and measurement

Finish the sentence: Angles in a quadrilateral add up to...

360°

Shape, space and measurement

Finish the sentence:
Angles in a triangle add up to...

180°

Score: 5

Score: 4

Shape, space and measurement

Finish the sentence: Alternate angles are...

Equal

Shape, space and measurement

Finish the sentence: Corresponding angles are...

Equal

Score: 5

Score: 5

Shape, space and measurement

What is tessellation?

Tessellation is a pattern of 2d shapes which fit together perfectly.

Shape, space and measurement

What is the difference between an angle and a bearing?

A bearing is measured from north; an angle is measured between two lines.

Score: 4

Score: 5

Shape, space and measurement

What is the axis of reflection?

The line which a mirror would be placed to reflect the shape.

Shape, space and measurement

Write down Pythagoras' theorem.

 $a^2 + b^2 = c^2$











Shape, space and measurement	Shape, space and measurement					
Using Pythagoras' theorem find the length of the hypotenuse if a = 4cm and b= 5cm	Point A is at (3,4), point B is at (6,7) what is the length of line AB?					
41	18					
Score: 3	Score: 5					
Shape, space and measurement	Shape, space and measurement					
Sine=	Cosine=					
$\frac{O}{H}$	$\frac{A}{H}$					
Score: 4	Score: 4					
Shape, space and measurement	Shape, space and measurement					
Tangent =	Change 456cm into m.					
$\frac{O}{A}$	4.56m					
Score: 4	Score: 2					
Shape, space and measurement	Shape, space and measurement					
If it takes Jill 30 minutes to walk 2km, how fast is she travelling?	What is the area of a rectangle? A = Iw					
1.11 m/s						
Score: 5	Score: 2					





Shape, space and measurement	Shape, space and measurement					
What is the area of a triangle?	What is the area of a trapezium?					
A = 0.5 x base x perpendicular height.	A = 0.5(a+b)h					
Score: 3	Score: 4					
Shape, space and measurement	Shape, space and measurement					
A parallelogram with base 3cm and perpendicular height 4cm, what is its area?	What is the formula for the circumference of a circle?					
12cm	$C = \pi d$ or $C = 2\pi r$					
Secure 5	Saara. 4					
Score: 5	Score: 4					
Shape, space and measurement	Shape, space and measurement					
The area of a shape is 3cm. If the lengths are	What is the volume of a prism?					
The area of a shape is 3cm. If the lengths are enlarged by scale factor 3 what is the new area?	What is the volume of a prism? Volume = area of cross section x length					
enlarged by scale factor 3 what is the new	What is the volume of a prism?					
enlarged by scale factor 3 what is the new area? 27cm ³	What is the volume of a prism? Volume = area of cross section x length V = al					
enlarged by scale factor 3 what is the new area?	What is the volume of a prism? Volume = area of cross section x length V = al Score: 4					
enlarged by scale factor 3 what is the new area? 27cm ³	What is the volume of a prism? Volume = area of cross section x length V = al					
enlarged by scale factor 3 what is the new area? 27cm³ Score: 5 Shape, space and measurement A cylinder has a radius of 2cm and a height	What is the volume of a prism? Volume = area of cross section x length V = al Score: 4 L8 Shape, space and measurement Does this formula represent a length, area or					
enlarged by scale factor 3 what is the new area? 27cm ³ Score: 5 Shape, space and measurement	What is the volume of a prism? Volume = area of cross section x length V = al Score: 4 L8 Shape, space and measurement					
enlarged by scale factor 3 what is the new area? 27cm³ Score: 5 Shape, space and measurement A cylinder has a radius of 2cm and a height	What is the volume of a prism? Volume = area of cross section x length V = al Score: 4 L8 Shape, space and measurement Does this formula represent a length, area or volume? 6ab + c²					
enlarged by scale factor 3 what is the new area? 27cm³ Score: 5 Shape, space and measurement A cylinder has a radius of 2cm and a height of 5cm. What is its volume?	What is the volume of a prism? Volume = area of cross section x length V = al Score: 4 L8 Shape, space and measurement Does this formula represent a length, area or volume?					





Handling Data

If the probability that it will snow is 0.75, what is the probability that it will not snow?

0.25

Handling Data

There are 2 blue balls, 3 yellow balls and 5 red balls in a bag, what is the probability of choosing a red ball out of the bag? Express as a decimal.

0.5

Score: 3

Score: 4

Handling Data

The probability of getting the wrong change in a shop is $\frac{1}{5}$. What is the probability of getting the wrong change in two different shops?

 $\frac{1}{25}$

Score: 4

Handling Data

There are 2 blue balls, 3 yellow balls and 5 red balls in a bag, what is the probability of choosing a red ball or a yellow ball out of the bag? Express as a decimal.

8.0

Score: 5

Handling Data

What is discrete data?

Data which can only take particular values, often whole numbers gained from counting

Handling Data

What is continuous data?

Data that can take any value in a given range, often found by measuring.

Score: 4

Score: 4

Handling Data

What is primary data?

Data you collected yourself.

Handling Data

What is secondary data?

Data collected by another group.

Score: 3





Handling Data	Handling Data						
What is a hypothesis?	What is a positive correlation?						
A prediction which can be tested by doing a survey.	A graph showing both values increasing.						
Score: 5	Score: 4						
Handling Data	Handling Data						
What is negative correlation?	What is zero correlation?						
A graph showing one value decreasing as the other increases.	There is no relationship between the values on the graph.						
Score: 4	Score: 4						
Handling Data	Handling Data						
What is the mean?	What is the median?						
Mean = sum of the values divided by the number of values used.	The median is the middle value when the numbers are put in order of size.						
Score: 3	Score: 4						
Handling Data	Handling Data						
What is the mode?	What is the range?						
The mode is the value that occurs most often.	Range = highest value – lowest value						





Score: 3

L8						
Handling Data	Handling Data					
What is the interquartile range?	Finish the sentence:					
Interquartile range = upper quartile – lower	All probabilities lie between the values of					
quartile.	0 and 1					
Score: 5	Score: 3					
L8	L8					
Handling Data	Handling Data					
What is the upper quartile?	What is the lower quartile?					
The upper quartile is the value covering the	The upper quartile is the value covering the					
first $\frac{3}{4}$ of the distribution.	first $\frac{1}{4}$ of the distribution.					
Score: 4	Score: 4					
Handling Data	Handling Data					
What are independent events?	What are mutually exclusive events?					
In two independent events, the second	In mutually exclusive events the second					
outcome is not altered by the first outcome.	outcome is affected by the first outcome.					
Score: 3	Score: 3					
Handling Data	Handling Data					
The letters: M A T H O L O P Y, are placed in a	The probability of getting a grade C at GCSE					
bag, what is the probability of picking out an O?	is 9%, what is the probability of not getting a grade C?					
$\frac{2}{9}$	91%					
9 Score: 3	Score: 5					





British John		nadmuM	eteO gnilbr	ısH	Algebra		Shapes, spa and measureme	Algebra	,	DOITON SOFT
Handling Data			ng Data				mper			Handling Data
Shapes, space and measurement	Handling Data	naliuliig Data		Handling Data	Number		Number		Shapes, space and measurement	
Number			nilbnsH				Num	Number		Number
Algebra					Matho					Shapes, space and measurement
Number					7					Algebra
Handling Data	Shap	B		nent	oly		epta	glA		Number
Shapes, space and measurement	Shapes, space and measurement	neasurement	Shapes, space	Shapes, space and measurement	-	Algebra	Algebra		Algebra	Handling Data
Algebra		Shapes, space ar	and	Shap			Algel	ora		Number
Afternoon break		Number	Handling D	ata	Shapes, space and measurement		Algebra	Number		Oetention in other poice