MULTIPLE REPRESENTATIONS PELMATHISM

Any number of players

RULES

For all the games large cards can be downloaded from the Let's Play link and cut out.

If you are not familiar with the cards, sort them into sets before you play. Choose the cards for the game you want to play. For example you might play with only the straight line graphs at first, or two types of cards rather than four. Shuffle the cards and place them face down on a table, in rows and columns or just spread out. Players take turns to turn over 2 cards. When the cards are from the same set the player keeps the pair and has another turn. If the cards don't match the two cards are turned face down in the same positions and the next player has a turn.

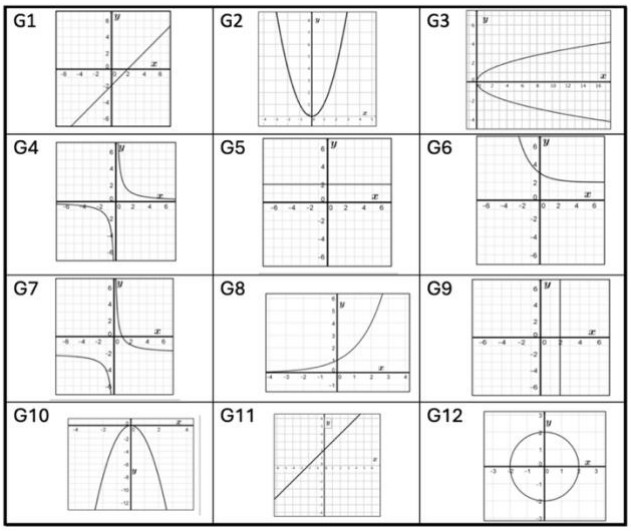
HOW TO WIN

The winner is the player with the most pairs when all the pairs of cards have been claimed.

Equations

E1 $y = \frac{2}{x}$	E2 $y = 2^{-x} + 2$	E3 $y = x^2$
E4 $y = x - 2$	E5 $y = 2$	E6 $x = 2$
E7 $y = \frac{2}{x} - 2$	E8 $y = 2^x$	E9 $x^2 + y^2 = 2^2$
E10 $y = x + 2$	E11 $y = -2x^2$	E12 $x = y^2$

Graphs



Tables

T1

x	-2	-1	0	1	2
y	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4

T2

x	-2	-1	0	1	2
y	6	4	3	$\frac{5}{2}$	$\frac{9}{4}$

T3

x	0	1	4	9	16
y	0	±1	±2	±3	±4

T4

x	-2	-1	0	1	2
y	-3	-4	$\pm\infty$	0	-1

T5

x	-2	-1	0	1	2
y	-4	-3	-2	-1	0

T6

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

T7

x	2	2	2	2	2
y	-2	-1	0	1	2

T8

x	-2	-1	0	1	2
y	-1	-2	$\pm\infty$	2	1

T9

x	-2	-1	0	1	2
y	2	2	2	2	2

T10

x	-2	-1	0	1	2
y	4	1	0	1	4

T11

x	-2	-1	0	1	2
y	0	1	2	3	4

T12

x	-2	-1	0	1	2
y	0	$\pm\sqrt{3}$	±2	$\pm\sqrt{3}$	0

Names

N1 Parabola	N2 Circle	N3 Straight line
N4 Parabola	N5 Exponential graph	N6 Straight line
N7 Exponential graph	N8 Inverse parabola	N9 Hyperbola
N10 Hyperbola	N11 Straight line	N12 Straight line

4 sets of cards down-loaded from the Let's Play link.

HELP

Find the 4 straight line graphs and their equations looking at where they cut the y-axis and the gradients.

Then match the 3 graphs that have a parabolic shape with their equations noting the $x = y^2$ is not a function because there are two y values for each x value.

Identify the 2 hyperbolas the 2 exponential graphs, and the circle in each case using the intercepts with the axes to help you to identify the equations.

NEXT

Give each learner a record sheet (downloaded from the Let's Play link). The record sheets give the graphs and tables and learners should fill in the equations, description and name and stick the sheet in their notebooks.
Hold a class discussion about the graphs and their features. Learners can fill in the record sheet during the discussion.

EQUATIONS

E1 $y = \frac{2}{x}$	E2 $y = 2^{-x} + 2$	E3 $y = x^2$
E4 $y = x - 2$	E5 $y = 2$	E6 $x = 2$
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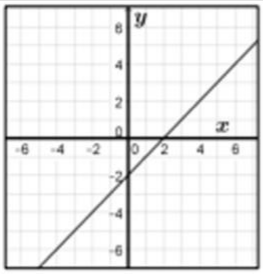
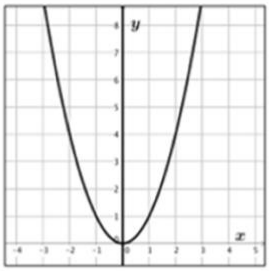
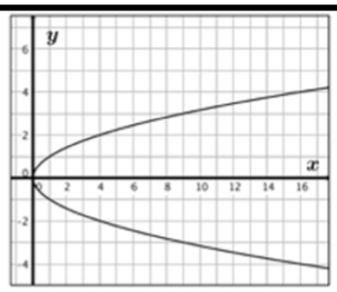
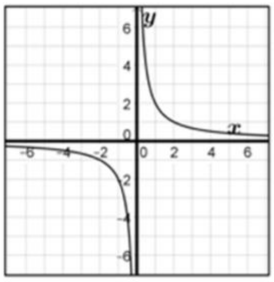
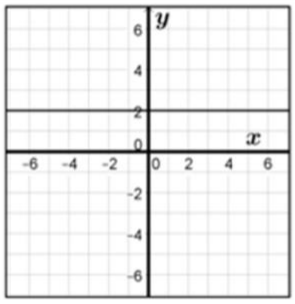
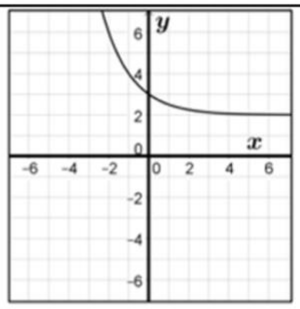
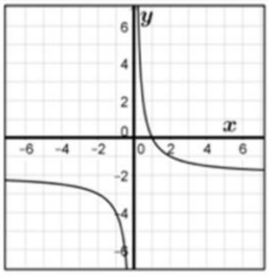
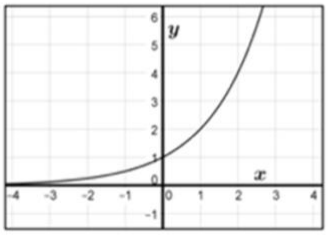
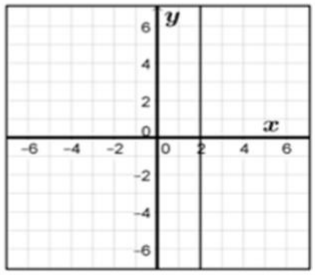
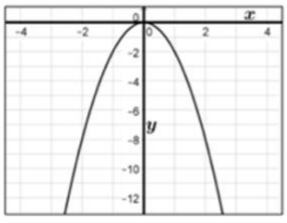
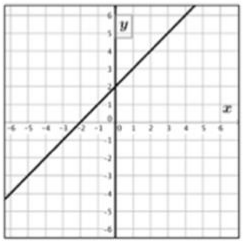
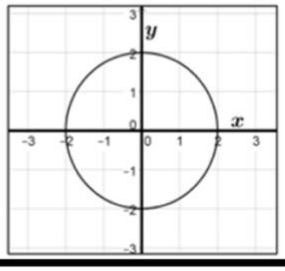
GRAPHS

G1 	G2 	G3 
G4 	G5 	G6 
G7 	G8 	G9 
G10 	G11 	G12 

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y	-4	-3	-2	-1	0

T6

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

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x	2	2	2	2	2
y	-2	-1	0	1	2

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y	-1	-2	$\pm\infty$	2	1

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x	-2	-1	0	1	2
y	2	2	2	2	2

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