

Table of contents

Introducing geometry

Why did Mickey Mouse go into outer space? (To find Pluto)	1
Lines, rays and line segments	2
Changing line segments	3

Solving problems with angles

When Adam introduced himself to Eve what three words did he use? (They are the same when read forwards or backwards.) (Madam, I'm Adam)	4
What is the title of this picture? (Nappy for a porcupine).	5
What does the runner-up in a Miss Universe contest win? (A constellation prize)	6

Solving problems with polygons

Triangle mania.	7
What's Dracula's favourite coffee? (Decoffinated).	8
Why should you beware of your computer? (Because it bytes)	9
Geobot	10
What do you call an attractive angle (An acute angle)	11
Geometry in our environment	12

Using tangrams to increase geometric awareness

Tangrams	13
Tangram match-up	14

Discovering lines of symmetry

Symmetrical design.	15
-----------------------------	----

Finding perimeter of a polygon

What kind of pliers do mathematicians use? (Multipliers).	16
Animalmania	17

Finding area of rectangles and triangles

What geometric figure is like a runaway parrot? (A polygon).	18
How do you know when Cyclops agree? (Because they see eye to eye).	19

Finding area of different kinds of polygons

What did Snow White say when her photos were late coming? (Some day my prints will come)	20
---	----

Determining the area of circles	
What did the acorn say when it grew up? (Geometry)	21
Finding volume	
If all the cars in your country were pink, what would you have? (A pink carnation). . .	22
Who invented fractions? (Henry the $\frac{1}{8}$)	23
Determining perimeter, area and volume	
What happens when there's an explosion at a hotel? (Roomers are flying)	24
What time is it when you have a toothache? (It's tooth-hurty)	25
Constructing solid figures	
Constructing solid figures: A cube	26
Constructing solid figures: A rectangular prism	27
Data sheet 1: A cube and a rectangular prism	28
Constructing solid figures: A square pyramid.	29
Constructing solid figures: A cylinder	30
Data sheet 2: A pyramid and a cylinder.	31
Finding examples of solid figures	
Solid figures	32
Correlating the study of geometry with English	
Specialised spelling list: Geometry	33
An ABC book of geometry	34
Graphing positive coordinates	
What bird prefers subfreezing temperatures and cannot fly? (A penguin)	35
Transforming a triangle into a chocolate drop	36
What animal is the most powerful winged predator of the night? (Owl)	37
Which present-day fish lived on earth during the time of the dinosaurs? (Shark).	38
Design distortion	39
What flower is one of the first signs of spring? (Daffodil)	40
What kind of dinosaur had three horns and was carnivorous? (A triceratops)	41
What animal has 40,000 muscles in its nose? (Elephant)	42
What dinosaur used spikes to help it fight its enemies? (Stegosaurus)	43

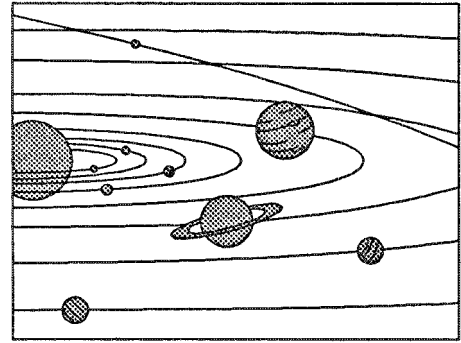
Graphing grid blocks	
A pyramid of cubes	44
Chain	45
Circles and squares	46
Something familiar	47
Reconstructing a puzzle	
What insect is an 'ugly duckling'? (Butterfly)	48
What is the oldest living reptile? (Turtle)	49
Graphing positive and negative coordinates	
Heart	50
Satellite, A nine-pointed star	51
What amphibian enjoys singing? (Frog)	52
What marsupial is known for its incredible speed and jumping power? (Kangaroo).	53
Geometric extravaganza	54–55
Interpreting pictographs	
Selling apples	56
Planets and their moons.	57
Average life span of some familiar animals.	58
Missions to the moon	59
Highest mountains	60
Interpreting line graphs	
Elevation and the boiling point of water	61
Average distances of planets from the sun	62–63
Creating graphs from tables	
Creating graphs.	64
Using decision making and planning to complete a graph project	
Graphing project: Decision making	65
Graphing project: Planning	66
Centimetre grid paper.	67
Grid paper (0.25 × 0.25).	68

Brain challengers: Geometry and graphing

Geometric puzzles with tangrams 70–71
Octahedron match 72
Remainder maths 73–77
Proportional drawings 78–79
What bird of prey keeps the same mate throughout its life? (Eagle) 80–81
Space shuttle 82–83

Answers 84–87

Why did Mickey Mouse go into outer space?



Directions: First, complete each definition below with one of the answers listed at the bottom of the page. Then, write the letter of the definition above the correct answer.

D = A part of a line that begins at an endpoint and goes forever in one direction is a _____

F = A polygon with four sides is a _____

L = An instrument used to measure angles is a _____

N = An angle that measures 90° is a _____ angle

O = The common endpoint of the sides of an angle is called a _____

U = A triangle with no congruent sides is a _____ triangle

I = Lines that meet or cross at one point are called _____ lines

O = An angle that measures more than 90° but less than 180° is an _____ angle

T = The distance around a polygon – the sum of the lengths of its sides – is called the _____

P = Lines that never meet are _____ lines

T = A five-sided polygon is a _____

Pentagon	Vertex	Quadrilateral	Intersecting	Right	Ray	Parallel	Protractor	Scalene	Perimeter	Obtuse

Lines, rays and line segments

Definitions

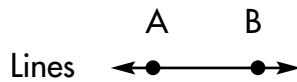
Line: A straight path that goes on forever in two directions.
 A B (line AB or \overleftrightarrow{AB})
 \longleftrightarrow

Ray: A part of a line that begins at an endpoint and continues forever in one direction.
 S T (ray ST or \overrightarrow{ST})
 $\bullet \longrightarrow$

Line segment: A portion of a straight line that is named by its endpoints.
 D E (line segment DE or \overline{DE})
 $\bullet \text{---} \bullet$



Directions: Give three or more examples of how each of the above geometric terms can be used to represent measurement in our lives. An example has been done for you in each category.



Example: The total number of stars in our universe. (There is an infinite number of stars; therefore, they can be represented by a line.)

- | | |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |



Example: The light from a torch. (You know the origin of the light, but you cannot measure exactly the distance the light travels.)

- | | |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |



Example: The measurement of the length of your maths book.

- | | |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

Changing line segments

Directions: Using the dot pattern given below, draw four line segments **without** retracing or lifting your pencil off the paper so that each of the points shown is on at least one of the segments. You have two sets of dots with which to achieve this challenge. (You can always draw your own dots on another sheet of paper.)

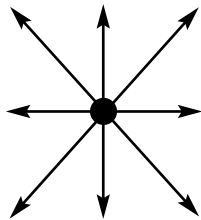


Set 1

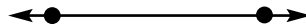
Set 2

Directions: There is an infinite number of lines which can be drawn through one point.

Example:

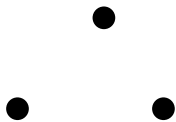


Exactly one line can be drawn through 2 points.

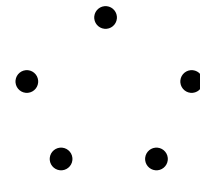


How many lines can be drawn through the points in each figure below? (assuming no three points are collinear*)

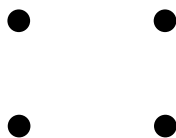
3 points



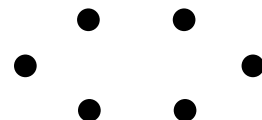
5 points



4 points



6 points



*Collinear: Points all in one line