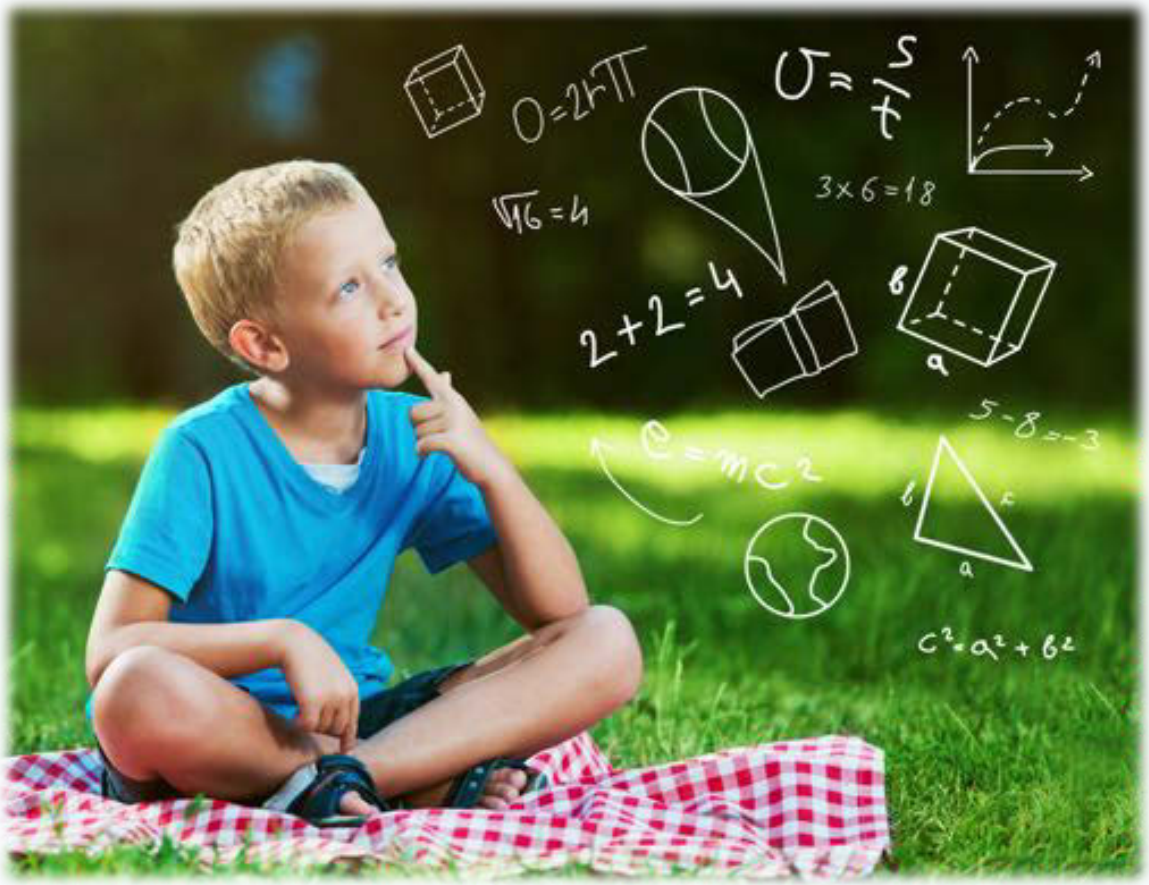
50 Mathematical Things To Do Outside Before You Are 6¾



Juliet Robertson @CreativeSTAR

1. Hang upside down

Photo replaced May 25th, 2020

What does the world look like from this perspective?
Does it look the same or different to being the right way up?

2. Kick a ball

How far can you kick a ball?

How will you measure this?

Does the size of your ball matter?

Or is it another attribute such as shape or how heavy the ball feels?

3. Spin on the spot

This is how to learn about rotation.

Can you invent other movement patterns?

Make up symbols to represent these and chalk on the ground.

4. Play Hide-and-Seek

How well can you count backwards from ten, twenty or a larger number? This is one of several skills needed for subtraction.

5. Explore giant weighing scales

Seesaws help children develop the concept of heavier and lighter in relation to their own body mass.

6. Dawn and dusk

Hold a sunrise or sunset party.

Bring sleeping bags, warm drinks and enjoy the natural display.

Seeing the changes happen nurtures a child's sense of time.

7. Cloud racing

Can you run as fast as a cloud moves across the sky?
Time yourself.

8. Catch raindrops with your tongue

How many can you catch in ten seconds?
Does the amount change each time you try?
What tactics do you use to ensure you catch the most?

9. Do all snowmen need to be identical?

Different sizes and shapes of snowmen help children learn about equivalence and transformation; that is, what is the same and what is different within a group?

10. Create snow sculptures

This enables children to explore three-dimensional objects in a personal way. They work with their sculptures from a range of positions and angles. It is practical problem-solving as their creations are moulded and shaped.

11. Make and fly paper planes

Which plane can fly the furthest distance?
Does it matter how hard you throw the plane?
What happens when you change the angle or height of the throw?

12. Jump as high as you can

Can you touch the sky?
What are your favourite jumping shapes to make?

13. Hug a tree

Find one with a girth that matches the size of your hug.

14. Play “Pooh Sticks”

You need a stick and a pedestrian bridge.

On the count of three, each person drops their stick into the water.

Predict which stick will float under the bridge and pop out first on the other side.

Do this lots. Find out whether the length of the stick affects its chances of winning. Or is it another factor?

15. Play with cardboard boxes

Children develop a sense of their own size and space in relation to other objects especially when they can crawl or sit inside a range of boxes.

16. Bubble blowing

What is the biggest bubble you can make?
Is this related to the size or shape of the blowing stick?

17. Play skittles

Count the number standing. Throw the ball and discover how many are knocked down and how many remain upright. This is addition and subtraction practice every time.

18. Tipping and pouring

Children like pouring water from one bucket into another.

- Put a range of different-sized containers outside. Fill one with water and watch your child play.
- If water is tipped on the ground, then wonder aloud how big and far the water can spread.
- Use string to measure the size of the splat made.

19. Split an apple into two halves

How can you work out if you have exactly one half?
Hint: Try weighing each piece.

20. Is the tide coming in or going out?

Estimate first, then check.
How long do you have to wait to discover the direction?
How many different ways can you safely find out?

21. Dig a hole to Australia

How much sand did you remove?

Is it possible to dig half a hole?

What does a whole hole look like?

22. Build sand castles

This is a practical approach to learning about volume and capacity.

Skills such as packing down and levelling the sand help develop accuracy which is an important aspect of measurement.

23. Stone stacking

Stacking is a property of three-dimensional objects.

Some stones stack well and others don’t. The challenge is to be able to discriminate.

Try ranking stones in order from the easiest to the hardest to stack.

24. Pattern making

Step back and give a child time to put objects into lines, circles and other patterns.

If you can’t resist joining in, work alongside copying what a child has done.

Photos capture the moment.

25. Where is Teddy?

Take turns to hide a teddy bear outside.

Give clues for others to find Ted.

Use positional language such as “behind”, “near”, “above” so that Ted is found.

26. Play hopscotch

Create a grid on a flat surface. The outline can be traditional or you can make up your own.

You can put any number sequence you like in the squares.

Each player needs to find a stone to use.

Remember to agree the rules before you start.

27. Hoop games

Count the number of hoops you have.

How many hoops can you throw onto a stick?

How many miss the target?

This is addition and subtraction in action!

28. Magnification

This is a practical introduction to the concept of scale.

Can you work out how many times bigger your magnifying glass makes an object appear?

Have fun exploring outside.

29. Seek out different viewpoints

A viewpoint can help children develop their sense of depth and perspective – essential spatial skills.

- What landmarks are near?
- What features are further away?
- Is there anything that looks much smaller than it really is? Why does this appear to be the case?

Enjoy talking about what you can see.

30. Run on ahead

Repeated walks through familiar places helps young children learn the networks of roads and paths. This develops their topological understanding and create mental maps.

31. Roly-poly down a hill

Rotation is an example of a geometric transformation. By rolling down a hill, a child experiences this as a whole body sensation.

- How many times do you rotate between two points on the hill?
- How do you make yourself roll more smoothly and quickly?
- What different ways of rolling down a hill can you find?

32. Go on a penny walk

Every time you come to a junction, flip a coin.

If it lands heads up, turn right.
If it lands tails up, turn left.

Where do you end up?

33. Number hunting

Look for numbers outside.

Start at zero. Then look for number one, then two, and so on.

Search for the biggest number you can find.

Talk about the purpose of numbers you see. Which one is the most interesting?

34. Shape searching

There are shapes everywhere. Enjoy discovering a wide range of 2D shapes and 3D objects – which are your favourites?

35. Rope swings

Rope swings require more balancing skills than most swings.

This helps children learn about their body mass and how heavy and light they may feel at different times when swinging.

36. Explore reflections

What reflections can you find when out and about?

Reflections are a mirror image.

This is an introduction to symmetry.

37. Puddle problems

Draw scale markings on the back of your wellies so you can measure the depth of the puddle.

Tread with care. It is easy to reach critical welly depth.

38. Be a puddle jumper

Is is possible to splash all the water out of a puddle?
This is volume displacement in action!

39. Play noughts and crosses

There are many strategy games which can be easily played outside. Children learn many maths skills such as probability and chance.

- Does it matter who goes first?
- What happens if you increase the size of the grid?
- What other changes could you make to this game?

40. Hand-fulls

Pick up a handful of objects and guess how many are there.

Then count them.

Is there a difference between your estimate and your check?

Have another go with a different handful.

41. Count your chickens

Count your chickens before and after they hatch.

Did every egg produce a chicken?

How close was your estimate?

Take a photo each day to see your chicken grow up.

42. Frog spawn

Each clump of spawn is made by one pair of frogs.

Many eggs are laid – is it possible to count them all?

Check daily and count the number of tadpoles which emerge.

Remember to look after your frog spawn and tadpoles – seek advice, if needed.

43. Grow sunflowers

During one season, the life cycle of this plant can be explored:

- How tall do you think it will grow?
- How will you measure the sunflower especially when it grows higher than you?
- How many days have passed from the first leaves to the flower appearing?

Sunflower seeds can be counted, eaten or left for the birds to eat. Keep some seeds for planting the following year.

44. Pick home-grown peas

Before you open a pea pod, estimate the number of peas inside.
Open up the pod and see if your guess was correct.
Is it always the same number of peas in every pod?
Do all peas look the same?

45. Look for spirals in nature

Think about the purpose and function of patterns.
Spirals are compact and do not take up much space.
What other common patterns can you find?

46. Grow money

This plant is called
“Honesty”.

It has another name which
is “Money-in-both-pockets.”
Can you work out why?

Plant the seeds and you can
grow your own money.

47. Money trees

It is meant to bring good luck and wealth if you hammer coins into a special money tree.

Go searching for one near you. Can you work out how much it is worth?

48. Follow that snail

Look for slimy snail trails at the start of a day.
Follow them and find the snail.
Do the biggest snails travel the furthest?
Hold a snail race on a moist smooth surface and handle with care.

49. Nature mandalas

These are circular patterns or art forms made with found natural objects.

It is usually easier to begin in the centre and build outwards.

They can be as big or as small as you want. Can you make one smaller than your hand?

50. Mud kitchen master chefs

Invent recipes to make and bake:

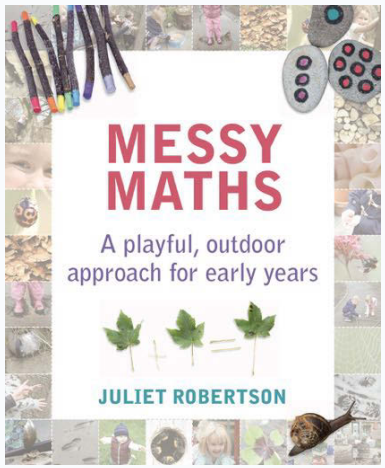
- Use a range of materials: mud, snow, cut grass, weeds, etc.
- Have different sizes of spatulas and stirrers
- Have a variety of containers
- Is it possible to create smelly cocktails, potions and chocolate soup?

Children will learn about quantities and weighing amounts.

Children + Maths = Fun

This resource is aimed at adults who work with children between the ages of 3-7yrs old. We want to ensure your children have time to enjoy playing outside where maths is inherent and in a real world context.

Many thanks go to Mark, Pedro, Vaidas, Meg and the Cosy crew for the design, critique and inspiration. Visit www.cosydirect.com



For more maths ideas, visit…
www.creativestarlearning.co.uk

Buy the book – Messy Maths
Available from any good online bookseller