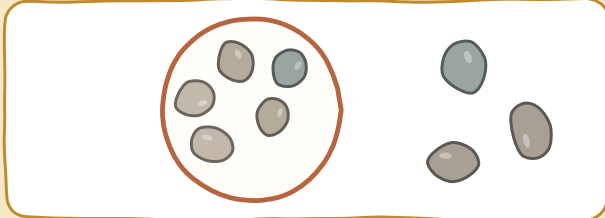


Math Provocation Cards

Counting and Number: cut on the dashed lines

Counting and Number

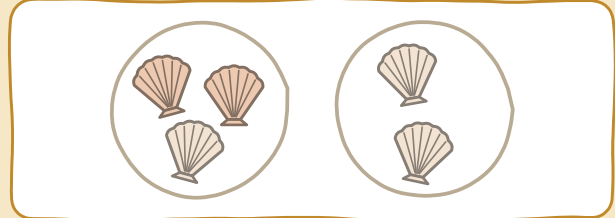


How many pebbles fit inside the circle?

Set out: A circle of string or a hoop, and a basket of pebbles of many sizes.

Listen for: Counting each pebble once, “it’s full”, and why big pebbles fit fewer. Try again: is it the same number?

Counting and Number



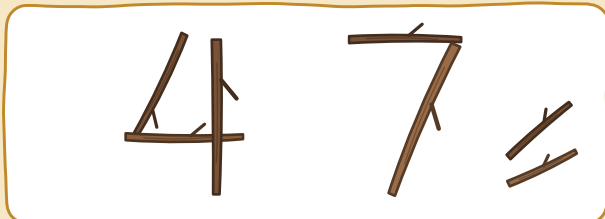
How many ways can you make 5?

Set out: Five shells and two small plates or trays.

Listen for: Ways such as 3 and 2, 4 and 1 or all 5 on one plate, and noticing that 2 and 3 is like 3 and 2.



Counting and Number

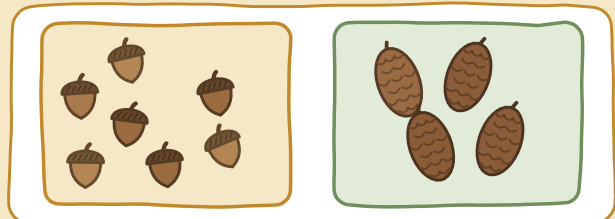


Can you make a number with sticks?

Set out: Sticks and twigs of many lengths, and number cards 0 to 10 to look at.

Listen for: Naming the number, straight and slanted lines, and how many sticks each number needs.

Counting and Number



Which pile has more? How do you know?

Set out: Two cloths, a handful of acorns and a few big pinecones.

Listen for: Matching one to one, counting, and “it looks bigger” against “there are more”.

Math Provocation Cards

Patterns: cut on the dashed lines

Patterns

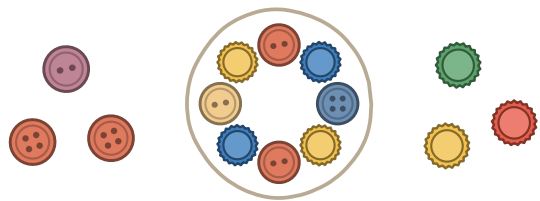


What comes next? Can you keep it going?

Set out: Leaf, acorn, leaf, acorn laid out in a row, and baskets of both.

Listen for: Saying the pattern out loud, finding the part that repeats, and new patterns made on purpose.

Patterns



Can you make a pattern all the way around?

Set out: A paper plate or a circle drawn on paper, buttons and bottle caps.

Listen for: Where a pattern starts in a circle, and whether it still works where the ends meet.



Patterns

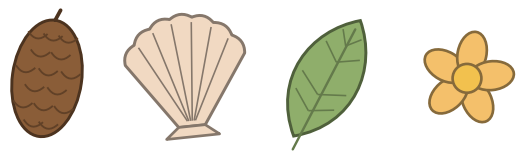


Can you make the same pattern with other things?

Set out: A row of pebble, pebble, shell, and baskets of buttons and bottle caps.

Listen for: "It's like big, big, small", and naming a pattern with claps, sounds or letters.

Patterns



Where can you find a pattern in nature?

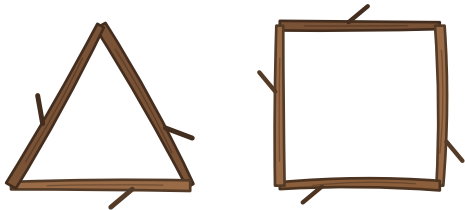
Set out: Pinecones, shells, leaves and flowers, and a magnifying glass.

Listen for: Rows on a pinecone, lines on a shell, veins on a leaf, petals going round, and "it repeats".

Math Provocation Cards

Shapes and Space: cut on the dashed lines

Shapes and Space

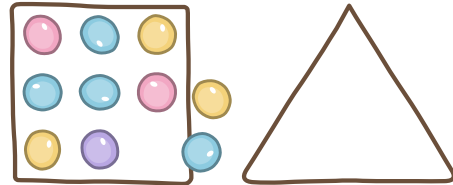


What shapes can you make with sticks?

Set out: Sticks of many lengths on a cloth or a tray.

Listen for: Counting sides and corners, “my square is wonky”, and changing one stick to make a new shape.

Shapes and Space

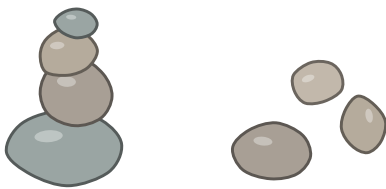


Can you fill the shape with no gaps?

Set out: Big shapes drawn on paper (a circle, a square, a triangle) and glass gems or buttons.

Listen for: Fitting gems into corners, inside and outside, and “the big one needs more”.

Shapes and Space

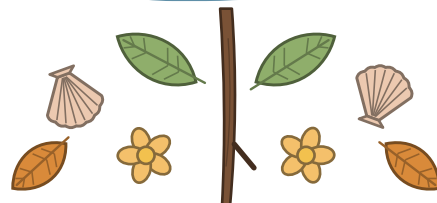


Can you build a tower that stands up?

Set out: Flat and round pebbles of many sizes on a steady table.

Listen for: On top, under and beside, big ones at the bottom, flat sides that stay and round ones that roll.

Shapes and Space



Can you make a design that is the same on both sides?

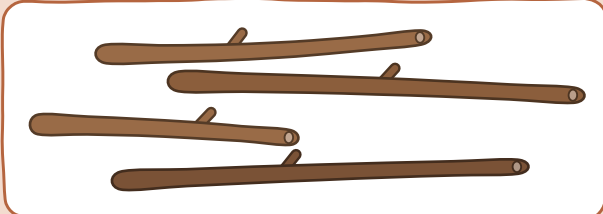
Set out: A stick laid down as the middle line, and leaves, shells and flowers in pairs.

Listen for: “The same on this side”, matching each piece across the line, and “it’s like a butterfly”.

Math Provocation Cards

Measuring and Comparing: cut on the dashed lines

Measuring and Comparing

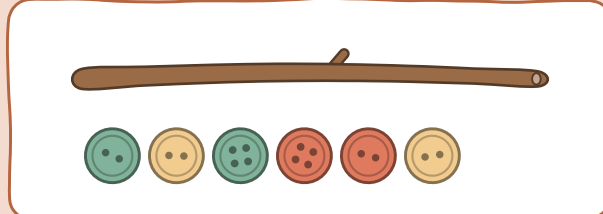


**Which stick is the longest?
How can you tell?**

Set out: Five or six sticks of different lengths, two of them the same.

Listen for: Lining up the ends, longer, shorter and the same, and putting the sticks in order.

Measuring and Comparing



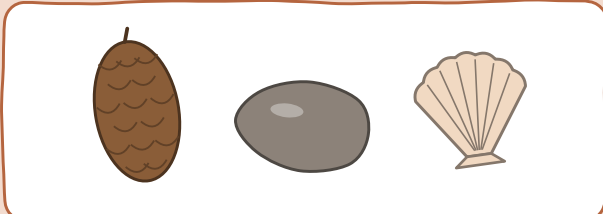
How many buttons long is the stick?

Set out: Sticks, buttons and bottle caps.

Listen for: Laying buttons end to end with no gaps, and a different number with caps: why?



Measuring and Comparing

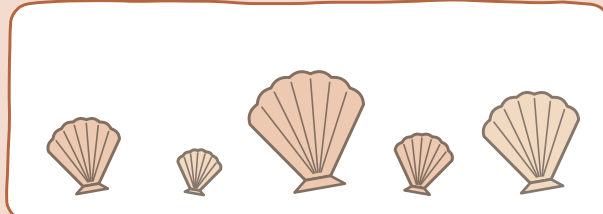


Which is heavier? How can you find out?

Set out: A pinecone, a pebble, a shell and a feather, and a balance if you have one.

Listen for: Holding one in each hand, heavy and light, and "big is not always heavy".

Measuring and Comparing



Can you put the shells in order?

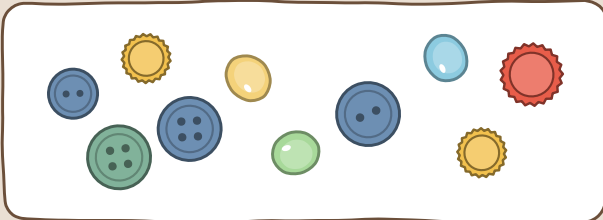
Set out: Shells of many sizes on a tray.

Listen for: Small, smaller, smallest, "this one goes in between", and orders by other ideas, such as color.

Math Provocation Cards

Sorting: cut on the dashed lines

Sorting

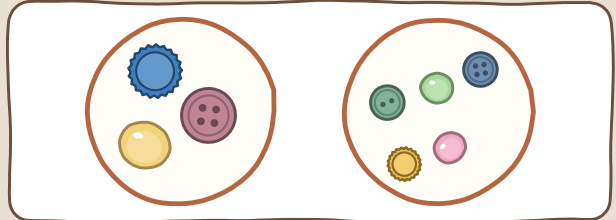


How could you sort these?

Set out: A mixed basket of buttons, bottle caps and gems, and a few small bowls.

Listen for: Sorting by color, size, shape or holes, and "these go together because..."

Sorting



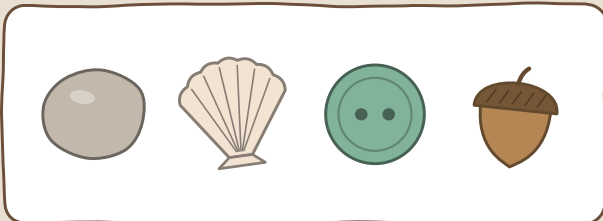
Can you sort them another way?

Set out: The same collection, already sorted one way (big and small).

Listen for: A new rule (by color, by kind), and telling a friend the rule.



Sorting

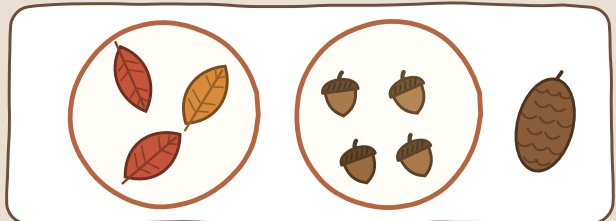


**Which one does not belong?
Why?**

Set out: Four things on a tray, such as a pebble, a shell, a button and an acorn.

Listen for: A different answer from each child, each with a reason: "people made the button".

Sorting



Where does this one go?

Set out: Two sorted groups, leaves and acorns, and one pinecone left out.

Listen for: A new group, a changed rule, or "with the acorns: they both grow on trees".

Math Provocation Cards

Estimating: cut on the dashed lines

Estimating

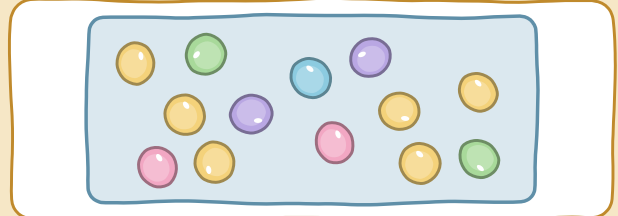


How many acorns are in the jar? Make a guess.

Set out: A clear jar with 10 to 20 acorns, and paper and a pencil for guesses.

Listen for: “More than 10”, “a lot”, guesses that change, and counting to check.

Estimating



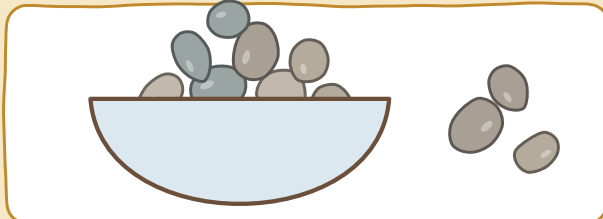
**Are there more than 10?
How do you know?**

Set out: A handful of gems on a cloth, and a ten frame nearby.

Listen for: Seeing small groups, “more than my fingers”, and filling the ten frame to check.



Estimating

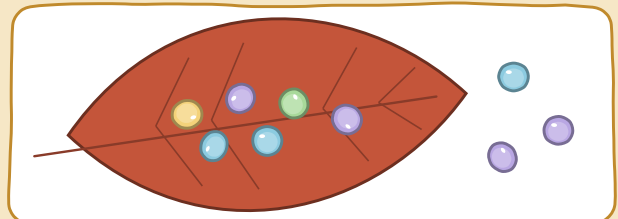


How many handfuls will fill the bowl?

Set out: A bowl, a basket of pebbles or acorns, and small hands.

Listen for: A guess before starting, counting handfuls, and “my hand is smaller than yours”.

Estimating



How many gems will cover the leaf?

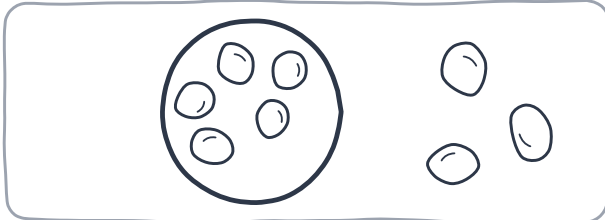
Set out: A big leaf (or a leaf shape on paper) and small gems or buttons.

Listen for: A guess first, covering with no gaps, and “it took more than I thought”.

Math Provocation Cards

Counting and Number: cut on the dashed lines

Counting and Number

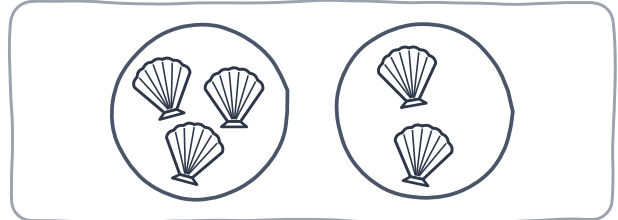


How many pebbles fit inside the circle?

Set out: A circle of string or a hoop, and a basket of pebbles of many sizes.

Listen for: Counting each pebble once, “it’s full”, and why big pebbles fit fewer. Try again: is it the same number?

Counting and Number



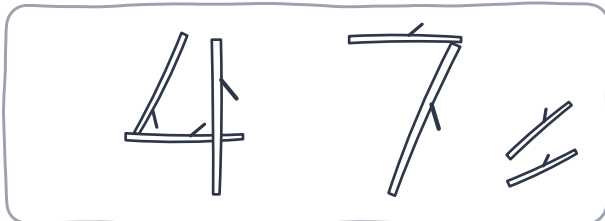
How many ways can you make 5?

Set out: Five shells and two small plates or trays.

Listen for: Ways such as 3 and 2, 4 and 1 or all 5 on one plate, and noticing that 2 and 3 is like 3 and 2.



Counting and Number

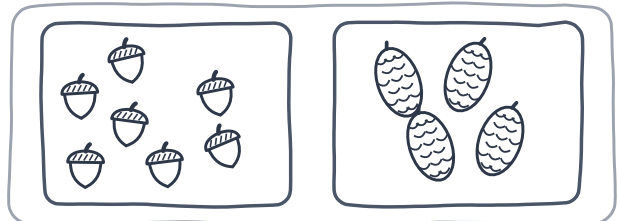


Can you make a number with sticks?

Set out: Sticks and twigs of many lengths, and number cards 0 to 10 to look at.

Listen for: Naming the number, straight and slanted lines, and how many sticks each number needs.

Counting and Number



Which pile has more? How do you know?

Set out: Two cloths, a handful of acorns and a few big pinecones.

Listen for: Matching one to one, counting, and “it looks bigger” against “there are more”.

Math Provocation Cards

Patterns: cut on the dashed lines

Patterns

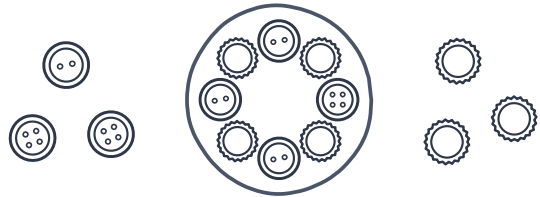


What comes next? Can you keep it going?

Set out: Leaf, acorn, leaf, acorn laid out in a row, and baskets of both.

Listen for: Saying the pattern out loud, finding the part that repeats, and new patterns made on purpose.

Patterns



Can you make a pattern all the way around?

Set out: A paper plate or a circle drawn on paper, buttons and bottle caps.

Listen for: Where a pattern starts in a circle, and whether it still works where the ends meet.



Patterns

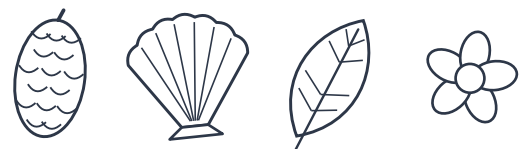


Can you make the same pattern with other things?

Set out: A row of pebble, pebble, shell, and baskets of buttons and bottle caps.

Listen for: "It's like big, big, small", and naming a pattern with claps, sounds or letters.

Patterns



Where can you find a pattern in nature?

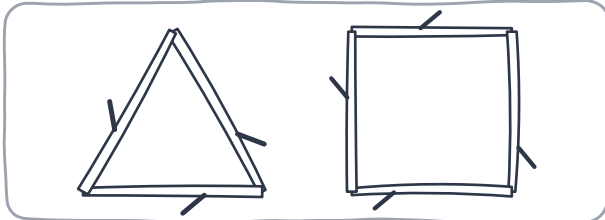
Set out: Pinecones, shells, leaves and flowers, and a magnifying glass.

Listen for: Rows on a pinecone, lines on a shell, veins on a leaf, petals going round, and "it repeats".

Math Provocation Cards

Shapes and Space: cut on the dashed lines

Shapes and Space

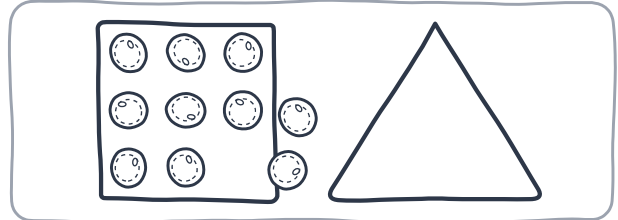


What shapes can you make with sticks?

Set out: Sticks of many lengths on a cloth or a tray.

Listen for: Counting sides and corners, “my square is wonky”, and changing one stick to make a new shape.

Shapes and Space



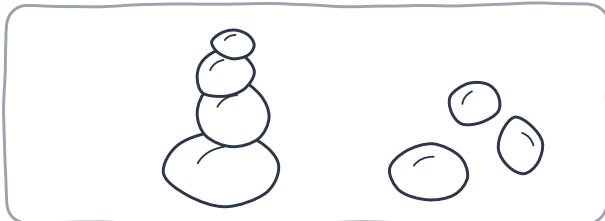
Can you fill the shape with no gaps?

Set out: Big shapes drawn on paper (a circle, a square, a triangle) and glass gems or buttons.

Listen for: Fitting gems into corners, inside and outside, and “the big one needs more”.



Shapes and Space

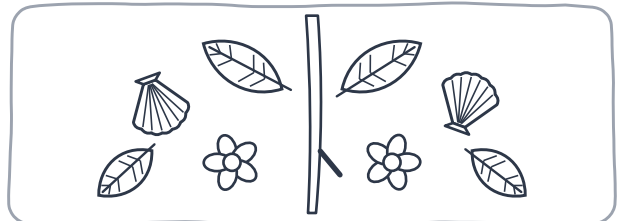


Can you build a tower that stands up?

Set out: Flat and round pebbles of many sizes on a steady table.

Listen for: On top, under and beside, big ones at the bottom, flat sides that stay and round ones that roll.

Shapes and Space



Can you make a design that is the same on both sides?

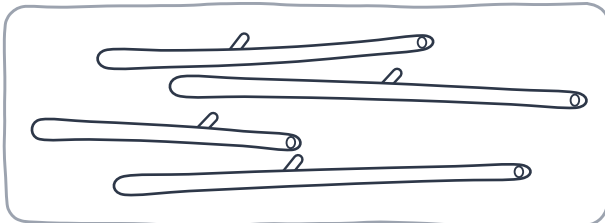
Set out: A stick laid down as the middle line, and leaves, shells and flowers in pairs.

Listen for: “The same on this side”, matching each piece across the line, and “it’s like a butterfly”.

Math Provocation Cards

Measuring and Comparing: cut on the dashed lines

Measuring and Comparing

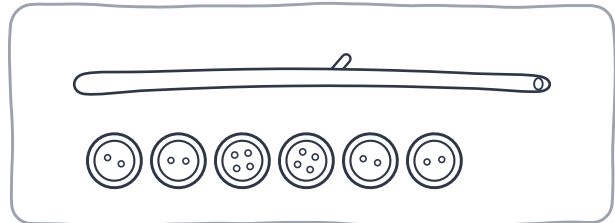


**Which stick is the longest?
How can you tell?**

Set out: Five or six sticks of different lengths, two of them the same.

Listen for: Lining up the ends, longer, shorter and the same, and putting the sticks in order.

Measuring and Comparing



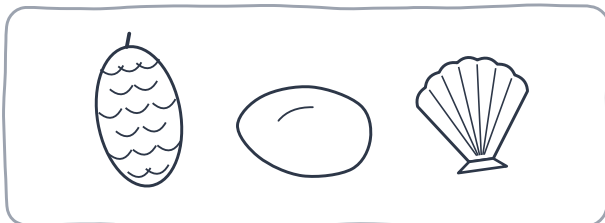
How many buttons long is the stick?

Set out: Sticks, buttons and bottle caps.

Listen for: Laying buttons end to end with no gaps, and a different number with caps: why?



Measuring and Comparing

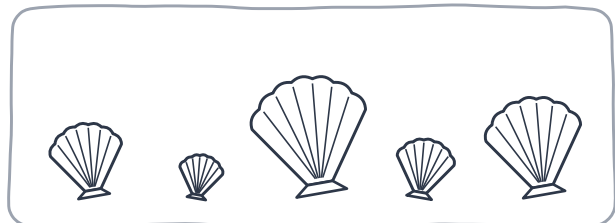


Which is heavier? How can you find out?

Set out: A pinecone, a pebble, a shell and a feather, and a balance if you have one.

Listen for: Holding one in each hand, heavy and light, and "big is not always heavy".

Measuring and Comparing



Can you put the shells in order?

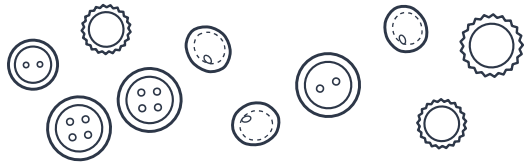
Set out: Shells of many sizes on a tray.

Listen for: Small, smaller, smallest, "this one goes in between", and orders by other ideas, such as color.

Math Provocation Cards

Sorting: cut on the dashed lines

Sorting

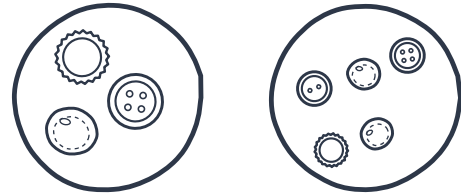


How could you sort these?

Set out: A mixed basket of buttons, bottle caps and gems, and a few small bowls.

Listen for: Sorting by color, size, shape or holes, and “these go together because...”.

Sorting



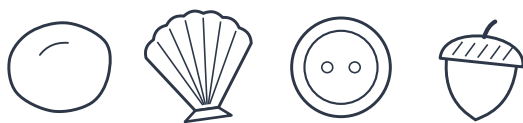
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Set out: The same collection, already sorted one way (big and small).

Listen for: A new rule (by color, by kind), and telling a friend the rule.



Sorting

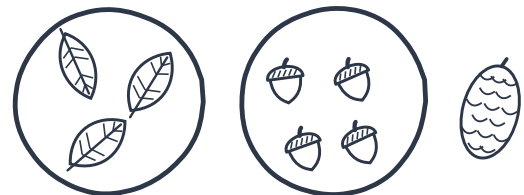


**Which one does not belong?
Why?**

Set out: Four things on a tray, such as a pebble, a shell, a button and an acorn.

Listen for: A different answer from each child, each with a reason: “people made the button”.

Sorting



Where does this one go?

Set out: Two sorted groups, leaves and acorns, and one pinecone left out.

Listen for: A new group, a changed rule, or “with the acorns: they both grow on trees”.

Math Provocation Cards

Estimating: cut on the dashed lines

Estimating

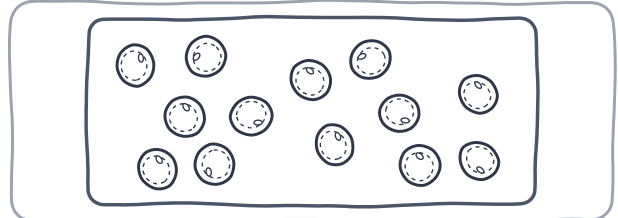


How many acorns are in the jar? Make a guess.

Set out: A clear jar with 10 to 20 acorns, and paper and a pencil for guesses.

Listen for: "More than 10", "a lot", guesses that change, and counting to check.

Estimating



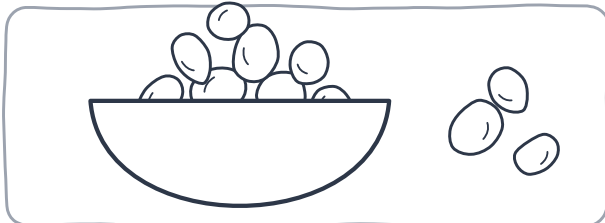
Are there more than 10? How do you know?

Set out: A handful of gems on a cloth, and a ten frame nearby.

Listen for: Seeing small groups, "more than my fingers", and filling the ten frame to check.



Estimating

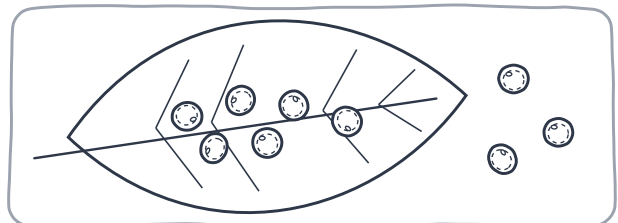


How many handfuls will fill the bowl?

Set out: A bowl, a basket of pebbles or acorns, and small hands.

Listen for: A guess before starting, counting handfuls, and "my hand is smaller than yours".

Estimating



How many gems will cover the leaf?

Set out: A big leaf (or a leaf shape on paper) and small gems or buttons.

Listen for: A guess first, covering with no gaps, and "it took more than I thought".