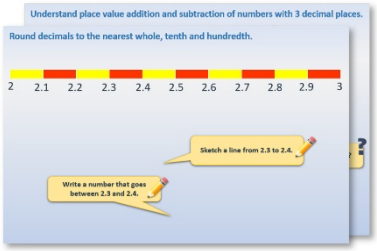
Week 7, Day 4
Capacity

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. Start by sharing the **Practical Activity**.



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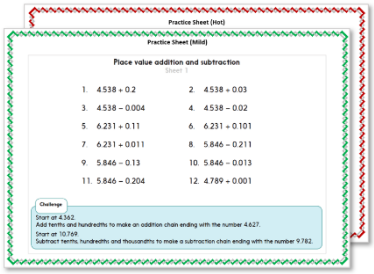
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either Mild (easier) or Hot (harder)!
Check the answers.



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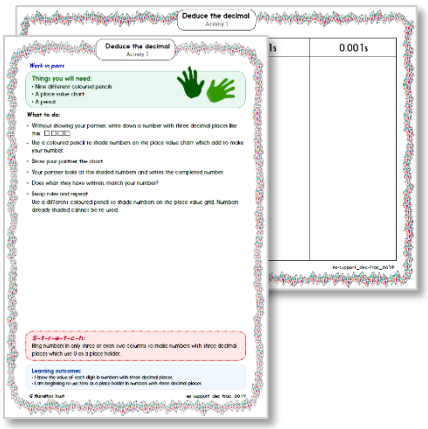
3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**



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4. Think you've cracked it? Whizzed through the Practice Sheets?
Have a go at the **Investigation**…

Practical activity

Make a Measuring Device for Capacity

You will need:

- ☺ A glass or transparent plastic bottle
- ☺ A strip of paper and Sellotape
- ☺ A felt-tip pen
- ☺ Rice, sand or small pieces of pasta or macaroni
- ☺ An egg cup or small cup from a doll's tea-set or a ladle
- ☺ Other containers, e.g. some different mugs

What to do:

- Attach the strip of paper from the bottom to the top of the glass.
- Tip 1 egg cup of rice into the glass.
- Make a mark on the paper to show 1 cup (or ladle).
- Tip in a second cup and then write 2 on the strip.
- Repeat until no more whole cups of rice will fit.
- Empty the rice out. You've made a measuring device!

- We can use this to find out how much other containers can hold. We are measuring their **capacity**.
- Show a mug. *How many cupfuls of rice do you think this might hold?* Less than 5? Between 5 and 10? More than 10?
- Take suggestions and write down your guesses.
- Fill the mug. Then use your measuring glass to count.
- Repeat to measure the capacity of other containers.
  Do we improve at estimating?
  Who is the best at estimating?!

Practice Sheet Mild

The cats' tea party

The teapot is full.
Each cat drinks the same number of MUGS of tea.
So, for example, they might drink 4 MUGS each.
Each cat's MUG holds a different number of CUPS.
The teapot is empty at the end.
How many MUGS does each cat drink?

Measuring CUP

HINT: The best way is to try this with real mugs and a pretend teapot (which could be a bottle!)

Challenge

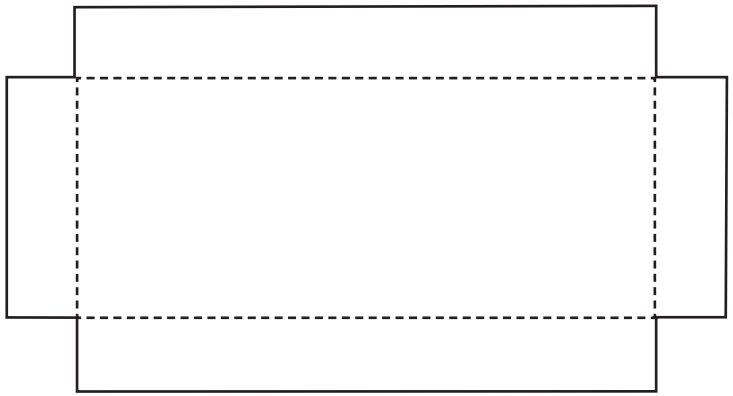
What if each cat drank the same amount of tea?
About how many mugs would each of the different cats have to drink to empty the teapot?

Practice Sheet Hot

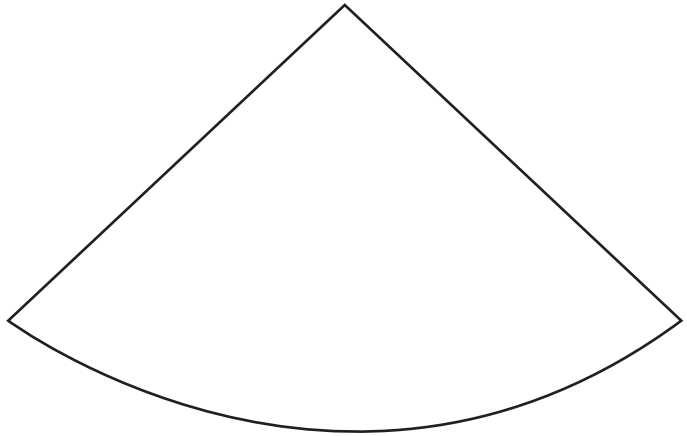
Capacity

Cut round the cone template. Roll this to create a cone. Use sticky tape to stick the edges.
Cut round the box template. Fold the sides along the dotted lines to make a box. Use sticky tape to stick the corners.
Which do you think holds more - which has the greater capacity?
Use lentils or rice to find out. Think about how you will do this.

Box template



Cone template

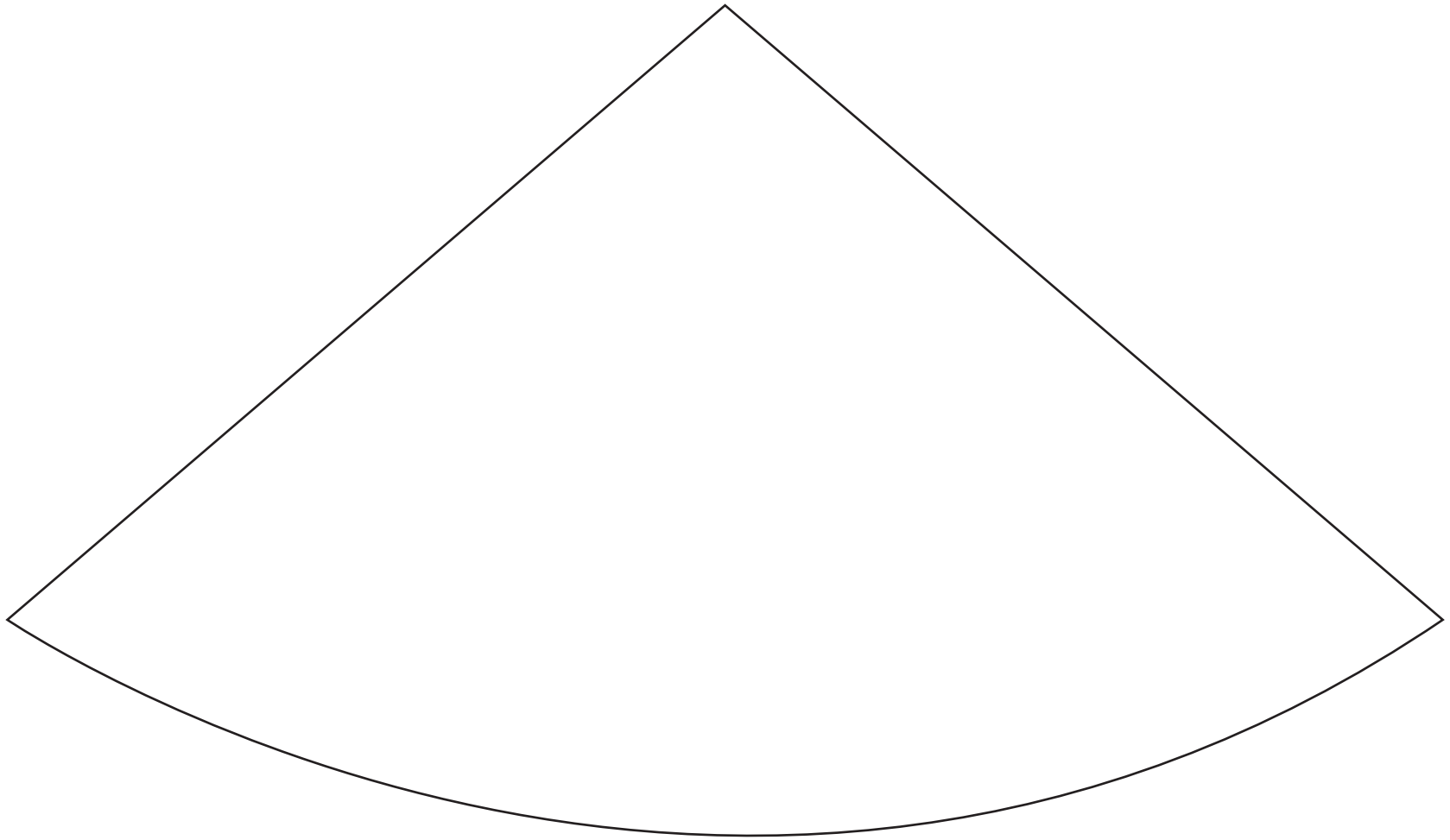


Challenge

Design a cone of your own which holds exactly 3 egg cupfuls.

Practice Sheet Hot
Capacity

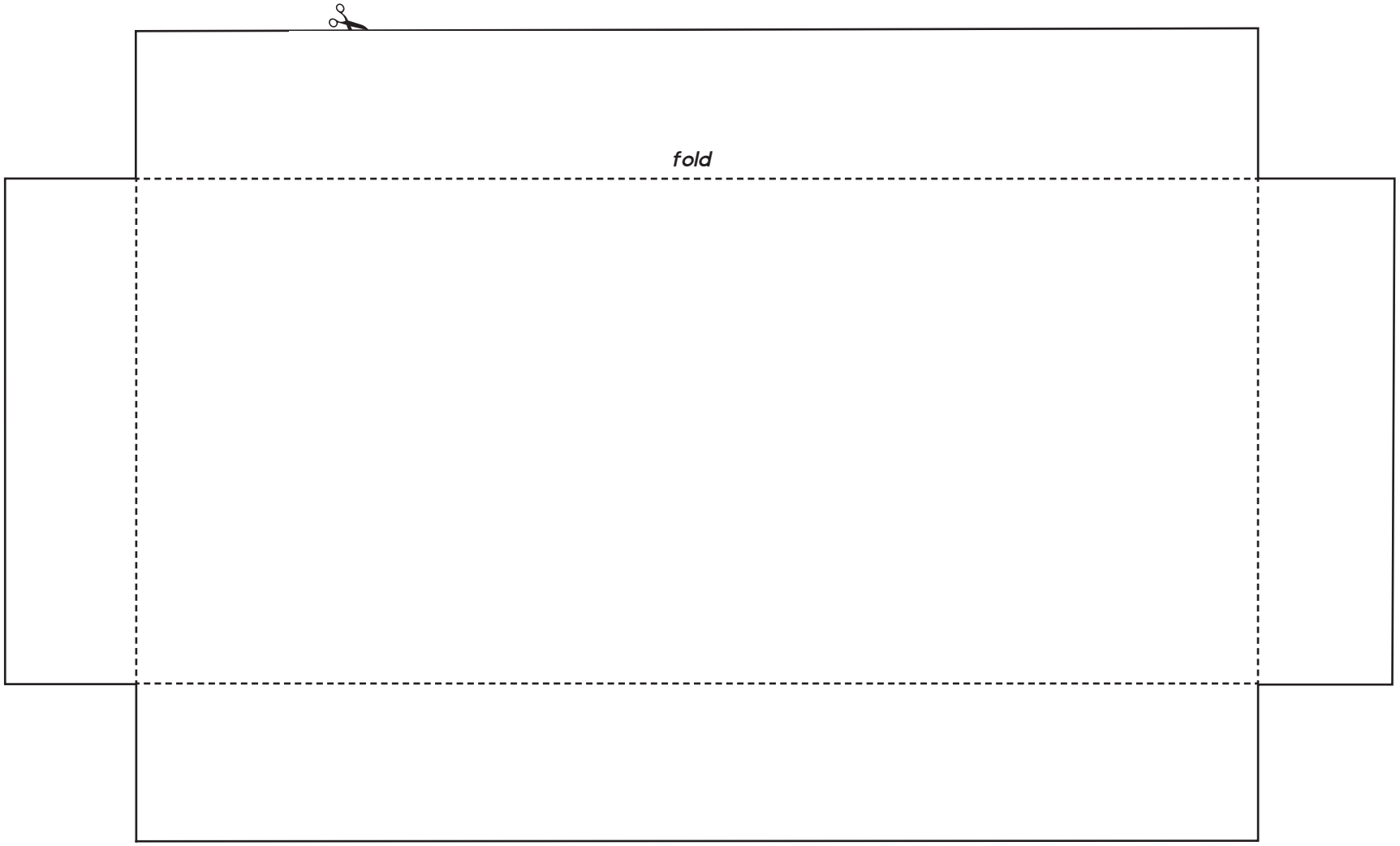
Cone template



Practice Sheet Hot

Capacity

Box template



Practice Sheets Answers

The cats' tea party (mild)

Each cat drinks 2 mugs of tea.
From left to right the cats drink: 3 cups x 2 = 6 cups, 5 cups x 2 = 10 cups, 1 cup x 2 = 2 cups, 4 cups x 2 = 8 cups and 2 cups x 2 = 4 cups (there are 6 + 10 + 2 + 8 + 4 = 30 cups in the teapot).
If each cat drank the same amount of tea, each would drink 6 cups.

Capacity (hot)

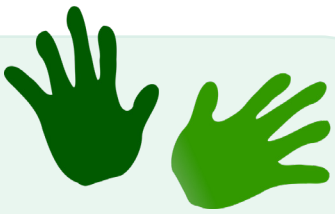
The box has the greatest capacity.

A Bit Stuck?
Pouring potions

Work in pairs

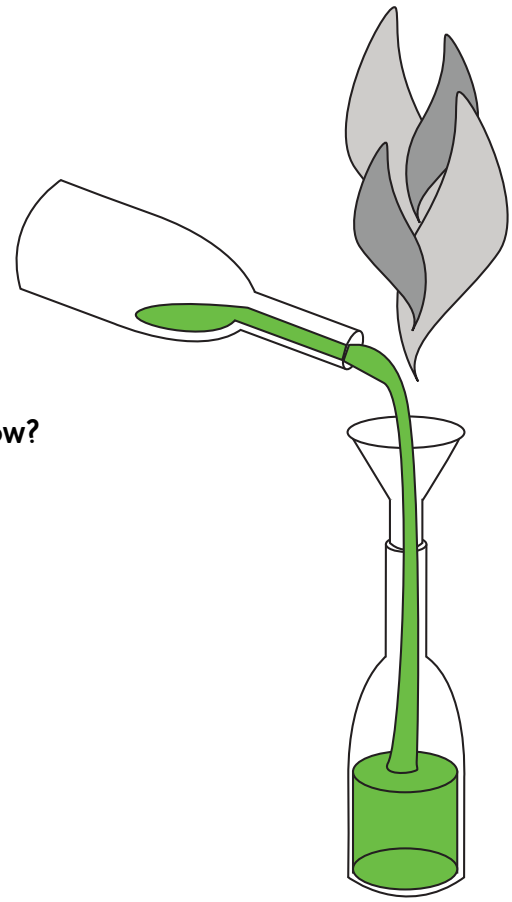
Things you will need:

- Jug of magic potion
- Funnel
- Washing up bowl
- Range of containers (bottles and cups)



What to do:

- Choose two containers.
  Which do you think will hold more potion?
- Put the two containers in the washing up bowl to catch any spilled potion.
- Fill the bigger container with potion.
- Now pour the potion from the bigger container through the funnel into the small container. Is there room left or did it overflow?
  Which container holds more potion?
- Repeat with other pairs of containers.



S-t-r-e-t-c-h:

Choose two containers. Which do you think will hold most potion?
Fill an egg cup with potion. Pour the egg cup of potion into one container. Keep doing this until you know how many egg cups of potion it will hold.
Repeat for the other container.
Which container held most egg cups of potion?

Learning outcomes:

- I can compare the capacities of two containers by pouring water from one to the other.
- I am beginning to measure how much containers can hold using an egg cup.

Investigation

Mystery potion

1. Here is a mystery recipe for a secret potion!
This potion makes you really good at maths! Can you work out the recipe?

> Potion for magical mathematical powers
>
> Ingredients:
> - Eyeball juice
> - Dragon's blood
> - Frog's spit
> - Phoenix tears
> - Water from the Magical Maths Mountain waterfall
>
> You will need:
> - one thimbleful of Phoenix tears
> - one hand of thimblefuls of eyeball juice
> - twice as much Dragon's blood as Frog's spit
> - twice as much water as Dragons' blood
>
> The whole recipe uses 20 thimblefuls

2. Work with your partner to find out how many thimblefuls of each ingredient you need.
What do you think the recipe means by 'one hand'?
3. When you think you have found a solution, check that the total number of thimblefuls is 20.
4. Test out your recipe. Pour 20 thimblefuls of water into a clear plastic glass. After each 2 thimblefuls, mark the number of thimblefuls on the side with a whiteboard marker. Tip out the water.
5. Add the correct thimbleful of each ingredient. Does the potion come to 20 thimblefuls?
Dare you taste it?! If so, see if it works during your next maths lesson!

The recipe needs 20 thimblefuls.

I have 1 of Phoenix tears.

Now I have 19 left to work out.

Challenge

Together write your own mystery recipe for another pair to work out.
Remember to say how many thimblefuls there are in total and check that it works!