MATHS TOOLKIT

JANUARY 29, 2021

CBMDC

Learning Support, SCIL Team, 0-25 Specialist Teaching and Support Services, Children's Services

Primary Maths Toolkit

The '*best endeavours*' duty:
"If a registered pupil or a pupil at a school or other institution has special educational needs, the appropriate authority must use its best endeavours to secure that the special educational provision called for by the pupil's or pupil's special educational needs is made." *
*(Section 66 of the Pupils and Families Act, 2014)

Class teachers should refer to the best endeavours document to ensure they are making reasonable adjustments to meet pupils' needs. The Learning Support Team have filtered the document so that Learning Difficulties are shown separately on pages 4-6. These documents can be used for reference or, schools may choose to use them to audit provision in place.

This toolkit has 9 sections: counting/number; place value; addition; subtraction; multiplication/division; money; time; geometry and length/weight/capacity. In each section there are general strategies that teachers can use in the classroom followed by 10-minute intervention ideas, which can be dipped into depending on the individual pupils' areas of difficulty. Their weaknesses will be indicated from the results of the Baseline Assessment.

For each section there are some resources provided which will complement the recommended intervention activities.

Contents

Bradford Best Endeavours Audit – Learning Difficulties Focus

Strategy for use in classroom/small group/1:1	QFT or additional	R,A,G	Comments
1:1 or Group multi-sensory evidence based numeracy programme delivered by trained facilitator such as Catch-up Numeracy.	Additional		
'Next steps' for learning derived from what the pupil can already do -referring back to earlier stages when necessary.	QFT		
Access to a wide range of practical resources	QFT		
Additional time to complete tasks if necessary	QFT		
Alternative ways to demonstrate understanding e.g. diagrams, mind maps, use of voice recorders	QFT		
Daily 1:1 reading, teaching through errors. Daily one to one reading following an approach based on direct instruction with on-going planning and reviewing	Additional		
Diagrams and pictures to add meaning alongside text			
Ensure key learning points are reviewed regularly throughout the lesson	QFT		
Ensure links to prior learning are explicitly made	QFT		
Explicit teaching of organisation and management skills such as resources, equipment, homework diaries, classroom routines and high expectations that these are in place	QFT		
Give opportunities for pupils to check solutions using a range of methods	QFT		
Give opportunities for pupils to make up problems using skills learned for their talking partner to solve	QFT		
Individualised pre-teaching concepts and vocabulary and a post teach check	Additional		
Instructions broken down into manageable chunks and given in sequence supported by visual guides and task plans	QFT		
Key learning points reviewed at appropriate times during and end of lesson to address	QFT		

Strategy for use in classroom/small group/1:1	QFT or additional	R,A,G	Comments
misconceptions, reinforce main ideas and articulate next steps on a learning journey.			
Key learning points reviewed at appropriate times during and end of lesson, and represented on task plan	QFT		
Learning scaffolds including assistive technology which reduce cognitive load and working memory demands until the learner has a good level of proficiency in a previous learnt skill	Additional		
Make close observations of pupils to fully understand the mathematical strategies being used to solve problems - get them to 'talk through' what they're doing	QFT		
Mark starting point for each line with a green dot	QFT		
Minimise copying from the board - provide copies for pupil if necessary	QFT		
Opportunities for pupils to transfer and generalise learning across contexts	QFT		
Planned opportunities to develop consolidation, over learning of skills using effective teaching methods and where programmes are over seen by qualified teachers	Additional		
Planned opportunities to revisit concepts an increased number of times in different contexts	Additional		
Precision Teaching (daily) facilitated by a trained person	Additional		
Present tasks in a meaningful context	QFT		
Pre-teaching of subject vocabulary	QFT		
Pre-teaching of subject vocabulary with regular opportunities to use and embed	QFT		
Provide a talking partner for pupils to share/explain their mathematical thinking	QFT		
Pupils encouraged to explain what they have to do to check understanding	QFT		
Range of coloured overlays/reading rulers available	QFT		
Resources, equipment, homework diaries make use of consistent symbols and colour coding	QFT		
Revision sessions to revise and consolidate what has been learned	Additional		
Specific, evidence based intervention for a specific subject area in cycles of 6-8 weeks with clear entry/ exit criteria and follow up evidence of transfer and generalisation of skills	Additional		
Specific evidence based intervention to develop Reading, Writing, Spelling and Mathematics skills which are planned, monitored and evaluated by qualified teachers	Additional		

Strategy for use in classroom/small group/1:1	QFT or additional	R,A,G	Comments
Pupils are given a range of ways to demonstrate understanding e.g. diagrams, mind maps, exit tickets, answering key questions, low stake quizzes, multiple choice questions	QFT		
Pupils encouraged to explain what they have to do to check understanding	QFT		
Support for pre-teaching concepts and vocabulary - Access to assistive technology must be made available as appropriate to the pupil's needs. e.g. Clicker 8, TextHelp –Read&Write, Penfriend, audio recording devices such as Talking Cube or Talking Postcard	Additional		
A maths intervention/programme such as 'Talk 4 Maths' at least once weekly	Additional		
A programme such as Talking Maths which targets speaking and listening skills in the context of mathematical language, at least once weekly	Additional		
Tasks and presentation are personalised to the pupil's needs and monitored regularly to ensure that they remain appropriate	Additional		
Teach and model memory strategies (storage, retrieval, reducing working memory load) within specific tasks	QFT		
Teach pupil how to use planners, task lists etc.	QFT		
Teach sequencing as a skill e.g. sequencing stories, alphabet , re-ordering texts, timelines etc.	QFT		
Text presented clearly - uncluttered, use bullet points and clear font	QFT		
Text presented clearly - uncluttered, use bullet points and clear font. Any visual aids to support an explanation are clear and concise and draw attention to key content of the lesson	QFT		
To support short term memory, have small whiteboards and pens available for notes, to try out spellings, record ideas etc.	QFT		
Use a range of alternative and assisted technologies as and when appropriate	QFT		
Use different coloured pens to support learning spellings, identifying different sections of text, one colour for each sentence etc.	QFT		
Use IT programs and apps. to reinforce and revise what has been taught	QFT		
Use of ICT to support recording skills such as Crick Software, Clicker 8 or Clicker applications	Additional		
Use squared paper - one digit per square	QFT		

Recommended Interventions / Resources for maths in general:

- http://www.mathematicshed.com/maths-intervention-shed.html - good all round intervention for maths – covers lots of areas.
- **The Number Box-** a multi-sensory intervention which in 5 minutes a day targets problem areas of maths. https://www.fiveminutebox.co.uk/the-five-minute-number-box/
- **Max's Marvellous Maths –** A Year 1 catch up maths programme.
- **Numicon –** can be used in many ways to support all number, place value and calculations areas of maths.
- **Catch Up Maths**
- **Addacus**
- See the resource 'ideas to teach early maths skills' below for general ideas to support the development of basic maths skills.

Ideas to Teach Early Maths skills

Objectives:

- To be able to count numbers 1 – 10
- Be able to counts objects 1- 10
- Be able to say which is more or less
- To be able to complete addtion and subtraction calculations using objects

Activities

- Make a number 1 book, number 2 book etc. Use objects, pictures of Numicon and numbers.
- You could also make a number feely bag. Get the pupil to put their hand in the bag and guess what the numbers are or say how many objects are in the bag. Alternatively, use the feely bag to focus on a number and go on a number walk/treasure hunt. Provide them with a picture task plan showing pictures of objects they have to find, e.g. 1 pencil, 1 cube etc. For two they would have to find 2 pencils, two cubes etc… (include Numicon pieces).
- Again using a feely bag, mix up all the number cards (have at least 3 of each number) – get the pupil to put all the 1's in the one bag, 2's in the two bag etc. You could also make post boxes for this activity.
- Jump on 1-10, roll the ball to number 1-10 etc…
- Go outside and play hopscotch – instead of throwing a stone, the pupil has to find a matching number card and place it on the corresponding number on the hopscotch to have a turn– they can then jump on the numbers rather than hop. Alternatively, you could get them to place a Numicon piece or the correct number of objects on a number.
- Use instruments and count the beat.
- Threading numbers of objects.
- Take pictures of the pupil holding numbers to sequence. Extend this to holding number 1 and then them and another pupil holding number 2 etc.

- When baking, take a picture of 1 cake, 2 etc. for the pupil to sequence. How many buns do we need to make for….?
- Trace and copy numbers on a white board, make numbers with play dough, plasticine, clay, write outside with a chalk, squeezy bottle, march in the shape of number etc…
- Precision teaching for number recognition and number bonds.

Ideas for using counting resources

1. Match numbers to numbers
    - Simply match cards.
    - Play lotto – use a sheet as a board and another to make the lotto cards.
    - Match the numbers of the same colour/different colours.
    - Play number snap/pairs.
    - Put the numbers around the room for the pupil to find and put them in the correct place on them number lotto board.

2. Match number of dots to number of dots, number of elephants to elephants etc…
    - Simply match the cards.
    - Play lotto, snap or pairs.
    - Put the cards with the dots, elephants, leopards, flowers or princess around the room – the pupil has to find them and match them to the corresponding quantity on their lotto board.
    - Match number of dots to elephants, elephants to leopards.

    Always talk about how many, when working with the dots or pictures help the pupil count them, count both of the cards they are matching so they can hear and see they are the same.

3. Match dots or pictures to their corresponding number using the variety of games above. When matching dots to numbers always count up to the number and then count the objects on the corresponding picture. Incorporate Numicon so they can also match Numicon shapes to numbers.

Extend these activities to more or less. For example, find a picture with one more dot, elephant etc…? Which number is one more?

Number

Number and Counting Skills

General Strategies

- Build up new knowledge slowly, ensure secure within an area / number band (range, i.e. 1-5, 5-10 etc.) before extending the learning.
- Encourage the use of counting songs to reinforce counting.
- Play lots of chanting or saying the number sequence activities – adult models to encourage pupil to join in.
- Use a number line to support number sequencing initially (examples in resources).
- Encourage the use of a number table mat (see example in resources) to support during maths lessons.
- When counting pictures encourage the pupil to put a mark on each item as counting.
- When counting concrete objects encourage moving into a straight line as counting to avoid confusion.
- Model what you want the pupil to do, to ensure they understand the concept / task.
- Make sure you are teaching rather than testing when sequencing numbers. If they can only recognise / sequence to 3, add 4 and 5 and continue adding just 1 or 2 new numbers at a time.
- Use plastic, wooden or foam numbers for the pupil to see / feel – make it multi-sensory.

Recommended useful websites:

- https://www.egon.co.uk/product/maths-made-easy-book-0-tactile-numbers
- https://www.egon.co.uk/page/maths-made-easy

10 minute activities – Number and Counting Skills

PKSS1 PKSS2 PKSS3 PKSS4 PKSS5 PKSS1**One and lots** – have a set of pictures with one or lots of objects / pictures – can the pupil give you the pictures with one? Or lots? Can they go and find you one of an object? Or lots of a given object? Repeat this activity to reinforce.
PKSS3 PKSS4Patterns – play games which involve copying patterns (see pattern game resource).

PKSS2 PKSS3 PKSS4 PKSS5 **Pairs / Snap** - Using 2 sets of number flashcards – play pairs or snap games. (See number flashcard resource).
PKSS2 PKSS3 PKSS4 PKSS5 **Pop up Pirate** game – the pupil has to read or write a number correctly to earn a sword to put in the barrel – activity ends when pirate pops up. 

PKSS2 PKSS3 PKSS4 PKSS5 **Dice games** – roll, write, count sheet (see roll, write, count resource). The pupil rolls the dice (numbers 1-6) says the number, writes the number and then draws / counts the correct number of spots. When secure extend to use 2 dice and numbers to 12.

PKSS2 PKSS3 PKSS4 PKSS5 **Multi-sensory number formation activities** – (see multi-sensory number formation resource). Practice writing numbers to 100.

PKSS2 PKSS3 PKSS4 PKSS5 **Number bag** – use a gift bag or a brown paper sandwich bag. Write/ stick the number on the front – illustrate with the appropriate number of dots – see photograph. If for example making a number 2 bag you would ask the pupil to collect number 2s, 2 of various

objects, the Numicon shape and you could also link to pairs by collecting socks, gloves etc. This can then be worked on daily to teach the target number and support counting with one to one correspondence to the target number.

PKSS2 PKSS3 **Cup number line -** To practice number recognition, counting with 1:1 correspondence and sequencing to 10 make some paper cups into number cups, as in the photo below. Place them in an arc in front of the pupil. Play games such as placing number cards, plastic or wooden numbers into the appropriate cup. Place the correct Numicon shape into a cup. Use counting objects and ask them to for example put 6 dinosaurs in the 6 cup. See number arc resource for more activities.

PKSS1 PKSS2 PKSS3 **Tracking sheets** - Tracking sheets are effective in supporting the learning of number sequences. See tracking and number maze resources for examples. Number dot to dot puzzles are also useful as an independent activity to develop number sequencing.

PKSS1 PKSS2 PKSS3 **Number stories/songs** - Use number books / stories / songs / rhymes and supporting resources to practice counting / recognising numbers. For example 5 little ducks (with some ducks to act out the song), 10 green bottles (with 10 bottles or pictures of bottles) etc.

PKSS1 PKSS2 PKSS3 **Personalised counting objects** - Use objects the pupil is interested in to practice counting i.e. animals, cars, footballs etc. For example, make fields from green paper and ask the pupil to put i.e. 3 cows in the first field, 6 sheep in the next field etc.

PKSS1 PKSS2 PKSS3 **Number paths** – Make large number cards (A4 size). Lay them out on the floor to make a number path, number maze, hopping game etc. Can they throw a beanbag onto the number you choose?

PKSS1 PKSS2 PKSS3 **Wrapping paper counting** - Use wrapping paper with fun images on to support counting with one to one correspondence (cut out different quantities of the pictures). For example wrapping paper with footballs on. Match the pictures to the appropriate number. Reinforce that the last number counted is the total number of objects.

PKSS1 PKSS2 PKSS3 **Give me… cards** - to practice counting with one to one correspondence, as an independent activity use the 'give me…' resource. Give the pupil some small counting objects and some of the cards and let them count the appropriate amount of objects on the cards for you to check when they have finished.

PKSS3 **Subitising** - to develop skills in subitising (recognising how many in a small group of objects without counting) try some of these activities:

- Dice games (roll a dice with spots and ask pupil to say how many without counting). Play any game which uses a dice with dots to practice.

- Dominoes.
- See subitising picture activity in the toolkit resources.
- Ladybird dots activity (see toolkit resources).
- Stars in the sky activity (see toolkit resources).
- Can identify a Numicon shape automatically without counting -play games with the Numicon shapes i.e. feely bag recognition, pairs, snap with Numicon flashcards.

PKSS5 **Counting in multiples -** Use any appropriate counting songs to illustrate counting in multiples (YouTube has a variety of these). Only work on counting in one set of multiples at a time to avoid confusion. See resource with word problems linked to counting in 2s, 5s and 10s.

Counting in 2s

- Use a number line - colour in the even numbers to illustrate counting in 2s.
- Use a large number line on the floor or write numbers in chalk on the playground – jump from 2 to 4 to 6 etc. Reinforce that they are missing one number out each time.
- Use pairs of socks to illustrate counting in 2s.
- Frog skip jumping. Use a frog toy and a large number line to illustrate the frog jump counting in 2s.

Counting in 5s

- Use a number line or hundred square to illustrate (provided in resources). Colour in all the multiples of 5.
- Use a hand to illustrate 5 at a time.
- Kangaroo skip counting – use a number line to illustrate jumping in 5s.

Counting in 10s

- Use a hundred square to illustrate – colour in all the 10 numbers – discuss the pattern made.
- Use both hands to illustrate counting in 10s.

Counting in 3s

- Use a number line to illustrate – colour in all the multiples of 3. Look at the pattern made.

PKSS1 PKSS2 PKSS3 **Number comparison** - Big and small – can the pupil find the biggest from a selection of objects? Can they find the smallest? Practice this until the concept of big and small is secure (see big and small activity in resources). Using a number line, circle a number i.e. 4 and ask pupil to count out 4 objects, then circle a larger number i.e. 10 and ask the pupil to count out the appropriate number of objects. Talk about the smallest number and the biggest number from the 2 selected with the objects to help illustrate.

- Using Numicon shapes for numbers to 10 – show the pupil a Numicon shape and ask them to find a bigger/smaller one from a feely bag with a full set of Numicon shapes.
- Ask the pupil to pick two random numbers from a pack of number cards – can they tell you which is the smallest and which is the biggest?

Number and Counting Resources

Number Cards

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
15	16	17	18	19
20	21	22	23	24

25	26	27	28	29
30	31	32	33	34
35	36	37	38	39
40	41	42	43	44
45	46	47	48	49
50	51	52	53	54

55	56	57	58	59
60	61	62	63	64
65	66	67	68	69
70	71	72	73	74
75	76	77	78	79
80	81	82	83	84

85	86	87	88	89
90	91	92	93	94
95	96	97	98	99
100				

Skills 4 Bradford

City of BRADFORD METROPOLITAN DISTRICT COUNCIL

Number mat

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Work mat – enlarge to A3 and laminate. Rest the pupil's work or exercise book on here.

Number Words

1 – one
2 – two
3 – three
4 – four
5 – five
6 – six
7 – seven
8 – eight
9 – nine
10 – ten
11 – eleven
12 – twelve
13 – thirteen
14 – fourteen
15 – fifteen
16 – sixteen
17 – seventeen
18 – eighteen
19 – nineteen
20 - twenty

Maths Symbols:


add, plus


subtract, takeaway


equals

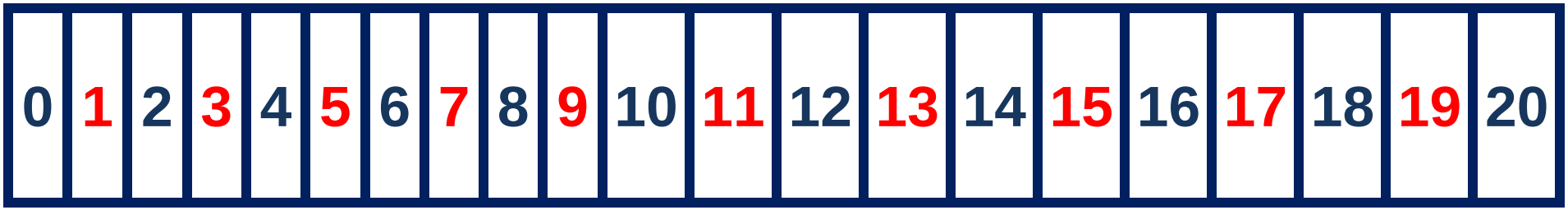

multiply, times


divide, lots of

0	1	2	3	4	5	6	7	8	9	10

0	1	2	3	4	5	6	7	8	9	10

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

One or Lots?

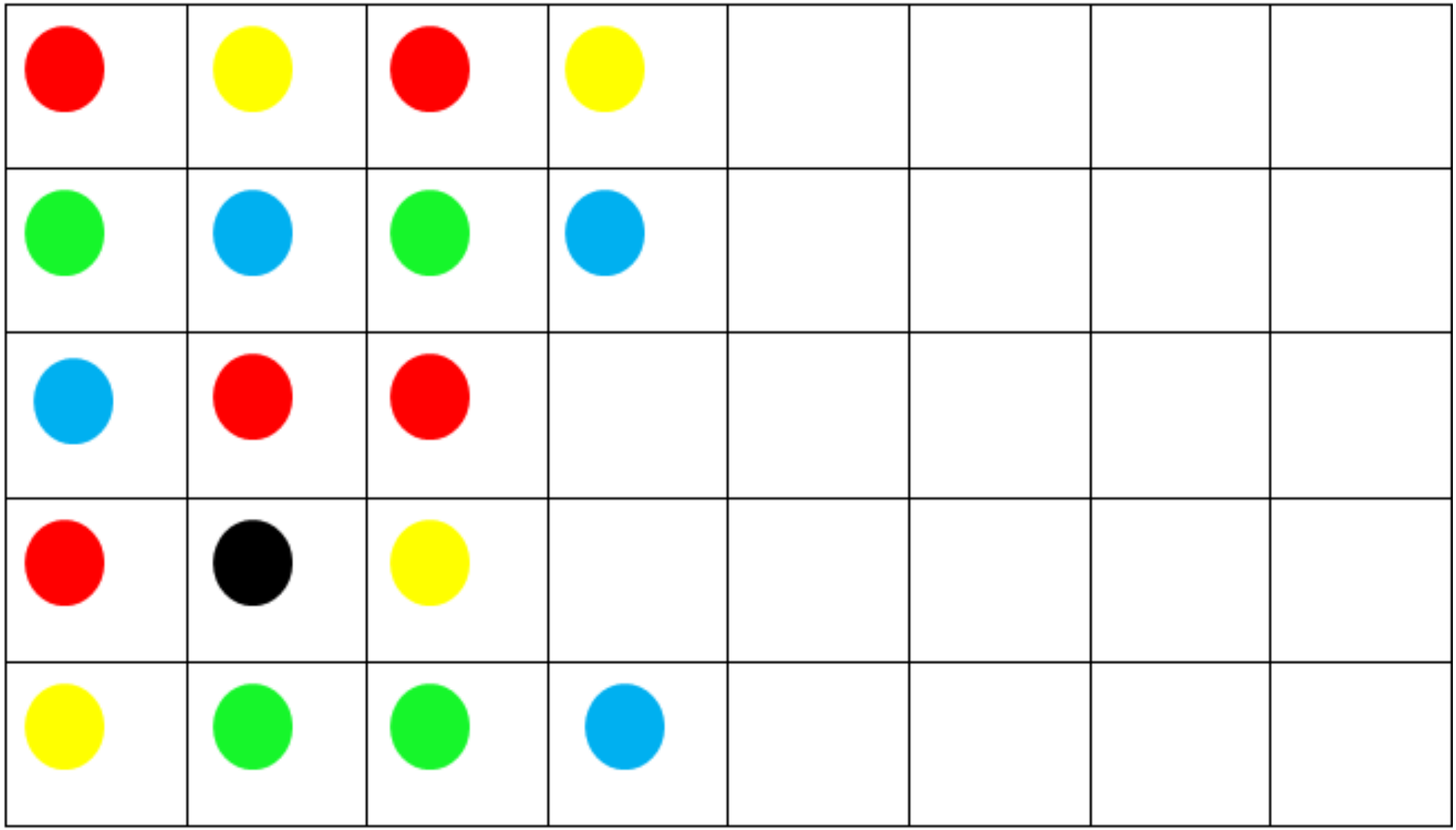
Can the pupil sort the pictures into the categories, one or lots?

Give me… cards.
Make these into individual cards and use as an activity to develop counting with 1:1 correspondence. This could be a quick independent activity. Add the numbers you are focusing on.

Give me ____	**Give me ____**
Give me ____	**Give me ____**

Patterns Game

Use counters to continue the patterns



Number Flashcards – print onto A3 paper and laminate

0	1	2	3	4
5	6	7	8	9

10	11	12	13	14
15	16	17	18	19
20	21	22	23	24

25	26	27	28	29
30	31	32	33	34
35	36	37	38	39

40	41	42	43	44
45	46	47	48	49
50	51	52	53	54

55	56	57	58	59
60	61	62	63	64
65	66	67	68	69

70	71	72	73	74
75	76	77	78	79
80	81	82	83	84

85	86	87	88	89
90	91	92	93	94
95	96	97	98	99

100				

Roll, Write, Count Mat

Roll

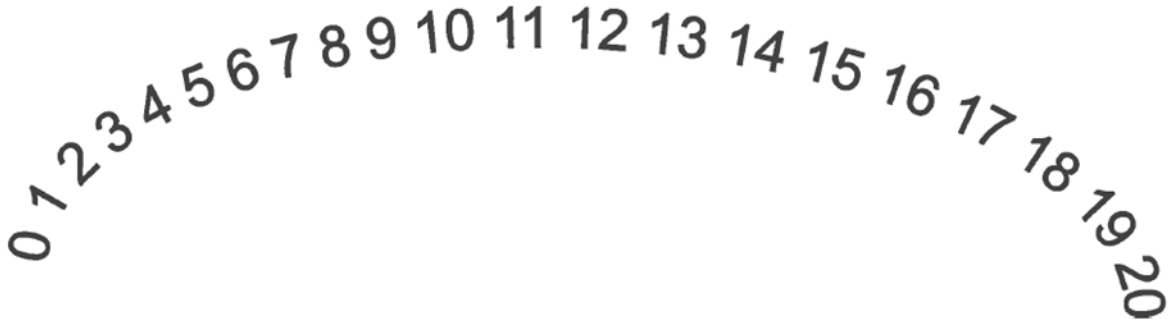
Write

Count

The Number Arc

Ideally use wooden, foam or plastic numbers that the pupil can feel and make the experience multi-sensory.

Start with numbers 0 to 10. When secure with 0-10 add 2 new numbers at a time (up to 20) until secure with the recognition, formation and sequencing of them.



Number Arc Activities

- Sequence the numbers into an arc shape.
- Ask questions such as what number comes before ---? After ___? Tell me a number bigger than ___? Smaller than ---?
- Ask the pupil to close their eyes and hold their hands out – can they identify a number by touch?
- Ask the pupil to close their eyes while you remove a number from the arc – can they work out which number is missing?
- Again ask the pupil to close their eyes and this time swap the places of two numbers – can they identify and put back in the correct position?
- Have a set of cards with pictures on (you could use the subitising pictures in this toolkit). Show them a card – can they find the corresponding number? Encourage them to say how many without having to count for numbers to 6.
- Instead of the numbers in an arc shape place a set of paper cups with numbers on in sequence.
- Can the pupil put the correct number of objects in each cup?
- Can they quickly put some random plastic, wooden, foam or number cards into the corresponding cups?
- Using Numicon shapes – can they quickly place in the correct cup?

Number Maze

Use a highlighter pen to highlight the numbers in the maze from 1 to 20 in the correct order.

1	4	5	6
2	3	11	7
20	16	12	8
7	11	10	9
3	12	3	5
8	13	14	9
1	4	15	16
7	1	3	17
6	20	19	18

Tracking sheets

Circle the number _____

3	6	9	5
7	5	3	2
8	4	6	9
4	2	7	5
3	4	8	1
9	5	8	6

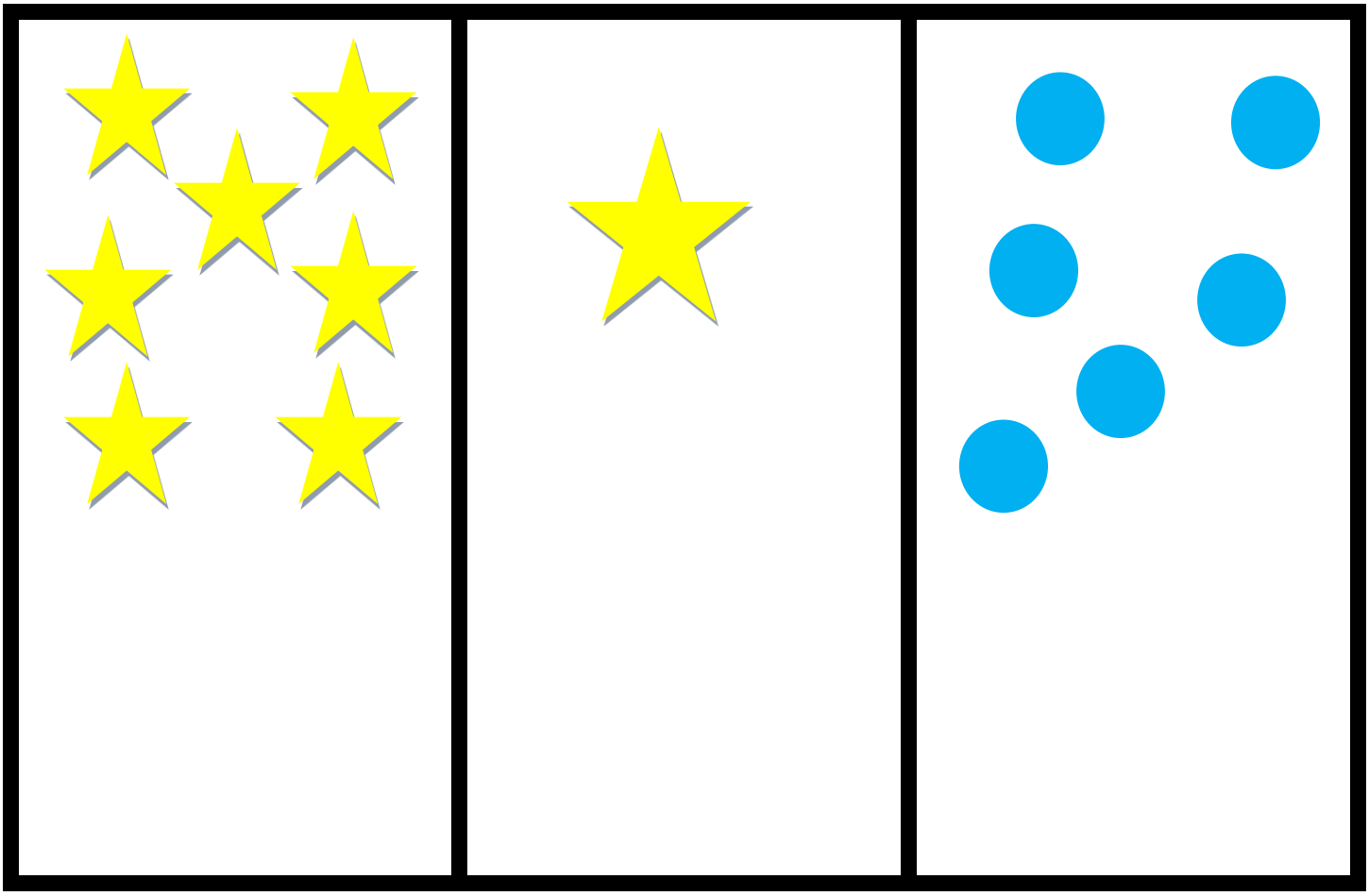
Tracking

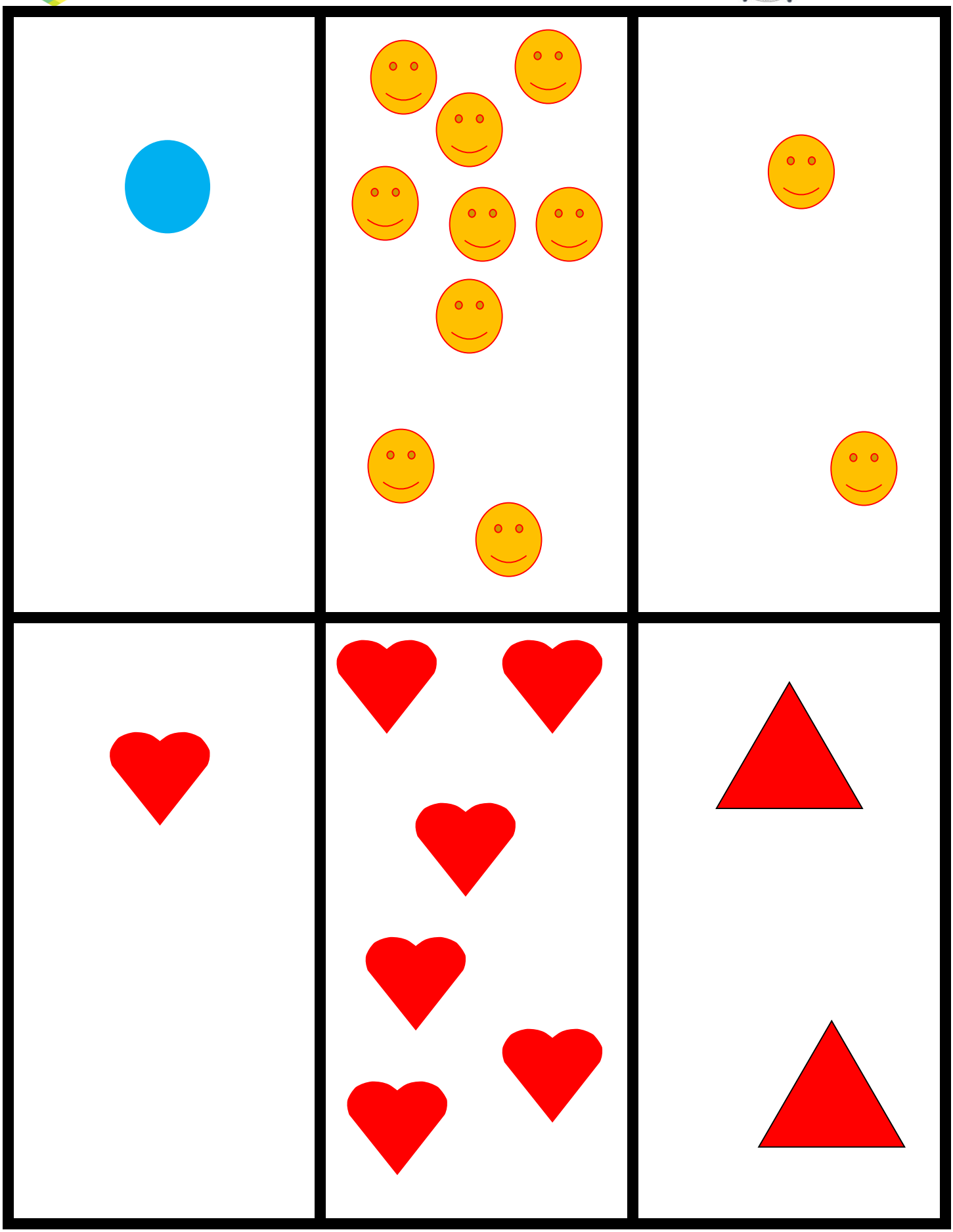
Use a bingo dabber, thick felt pen or paint brush to cover the target number.

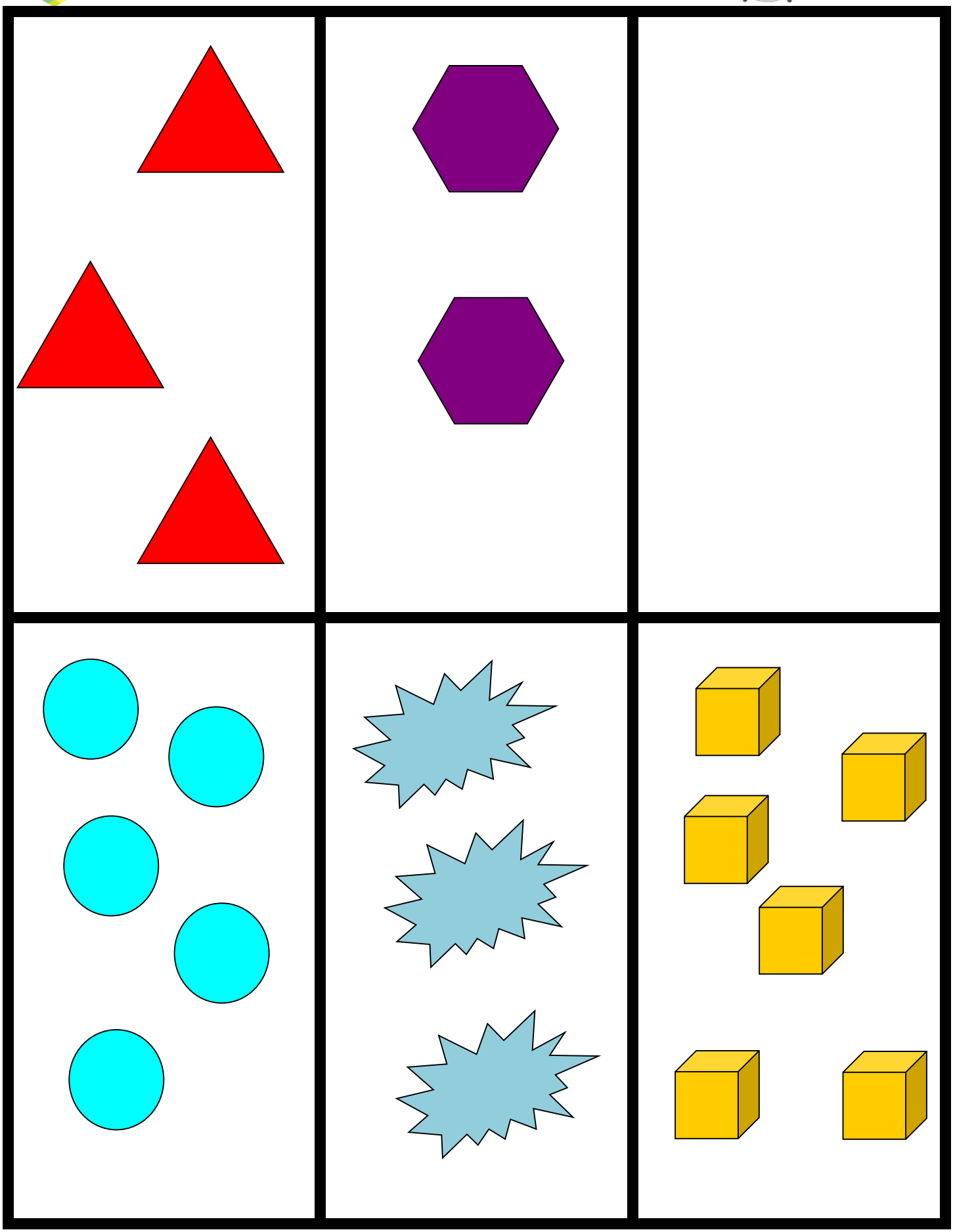
Target Number ____

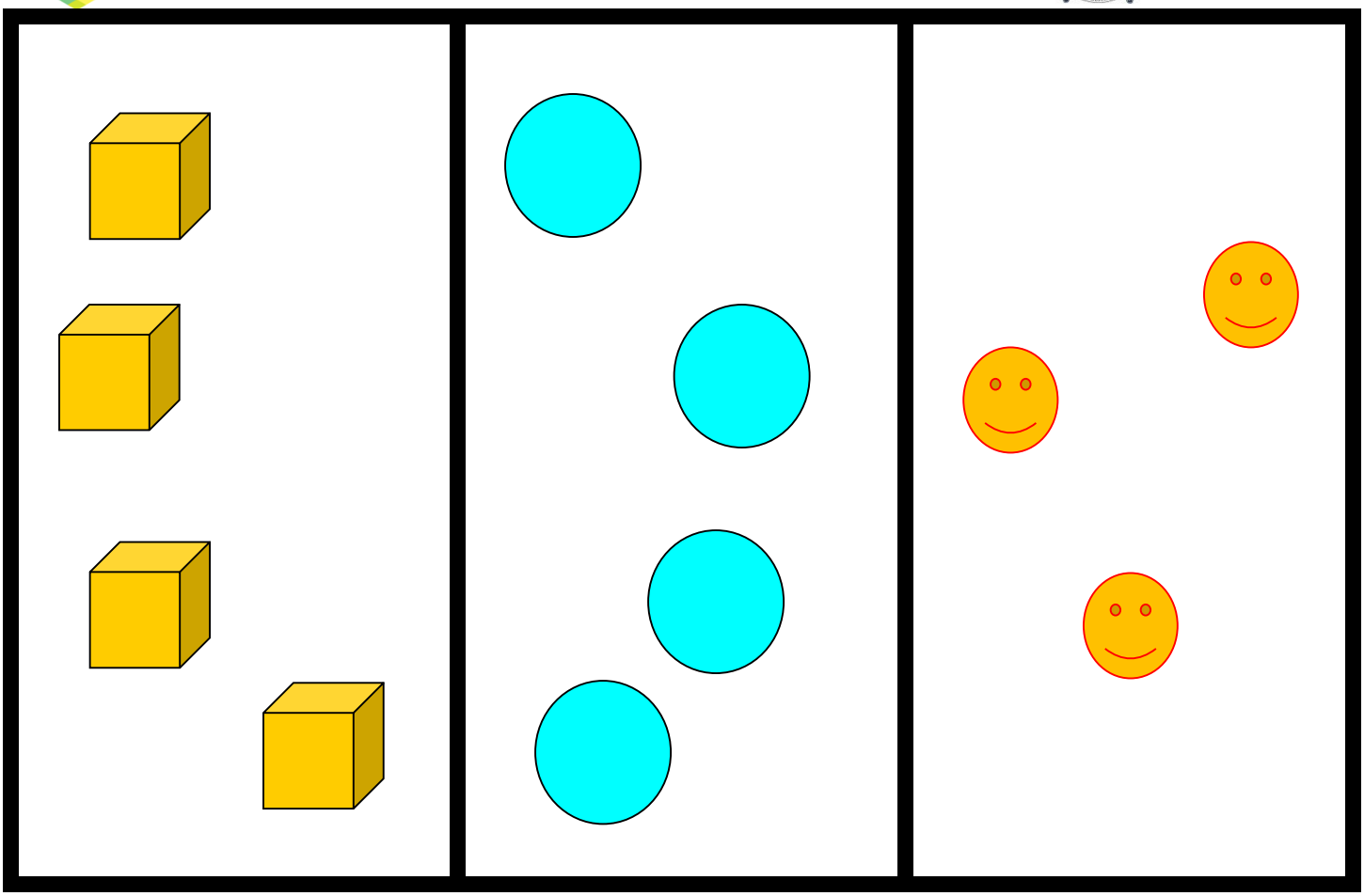
5	1	3	4
2	3	1	5
3	4	2	1
2	5	3	2
4	1	5	2

Subitising Pictures



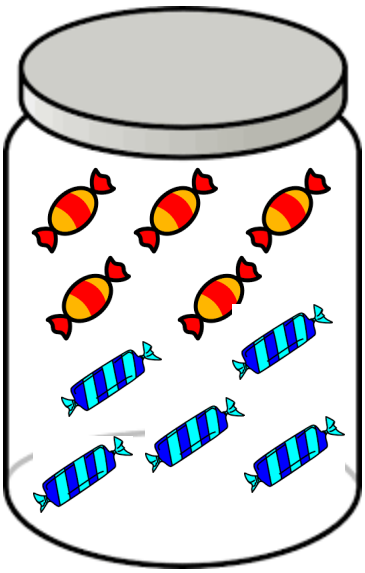






Cut out the sky and the stars. Place some stars in the sky and ask the pupil to say how many stars without counting them. Work with 1 – 6 initially then build up to 10.

Counting problems

Counting in 2s Problems	
There are 2 puppies in a basket. How many puppies in 3 baskets? How many puppies in 5 baskets? How many puppies in 6 baskets? How many puppies in 9 baskets?	
Counting in 5s Problems	
There are 5 crayons in a packet. How many crayons in 2 packets? How many crayons in 5 packets? How many crayons in 7 packets? How many crayons in 10 packets?	
Counting in 10s Problems	
There are 10 sweets in a jar. How many sweets in 3 jars? How many sweets in 5 jars? How many sweets in 8 jars? How many sweets in 10 jars?	

Hundred Square

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Multi-Sensory Activities to Support Number Formation and / or Recognition

As the pupil is writing the number ensure they are saying it too.
This strategy can be used for 2 or 3 digit numbers too

Play Dough Numbers - use play dough to form numbers – pupil can then trace over with their finger.

Chalk – write numbers with chalk on a chalkboard, on black sugar paper or outside on the playground.

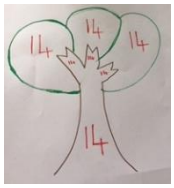
Water writing – an alternative to writing numbers on the chalkboard. Use chalk to cover the chalkboard and have your pupil use a paintbrush (or their finger) dipped in water to write their words in the chalk.

Small/Medium/Large Words

Get the pupil to write the number 3 times as quick as they can, then

as big as they can, as small as they can and with their eyes closed.

Picture Numbers – ask the pupil to draw a picture and then write the target number in each segment of the picture i.e. a flower or house.



Pipe Cleaner numbers - use pipe cleaners - bend and form to make the target number.

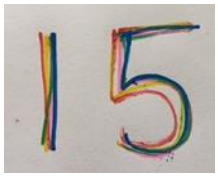
Wikkistix – bend the Wikkistix to make your number.

Sand/rice/lentils/glitter tray – write the number with a finger in the tray saying the number as writing it.

Shaving foam - Make a thin layer of shaving foam on a tray and ask you pupil to write the number with their finger.



Rainbow Numbers – write the target number using different coloured felt tip pens or crayons repeatedly over the top to make a rainbow effect.



Finger Paint - let them get messy and have some multi-sensory fun and finger paint their numbers.

Cotton Bud Writing - Use Cotton Buds and paint to write the target number.

Paint Bags - Pour paint into a ziplock freezer bag and seal. Secure with some tape. Use fingertips to write numbers (or words) on bag. To erase, simply squish bag and you are ready to start again.

Build a number (or word) with building bricks-

Glue & glitter/rice/sand - Write out the number in glue and sprinkle some glitter on top. Glitter makes everything fun, doesn't it? Alternatively sprinkle lentils, rice or sand. When dry the pupil can trace over the number to rehearse the formation.

Smelly words-

Use scented felt pens to write the numbers

Magnetic board number writing

Water fun! Using a squirty bottle in the playground ask the pupil to squirt the shape of the number.

OR

Give the pupil a paintbrush and a bucket of water – can they 'paint' the numbers in the playground?

Scavenger hunt 1 –

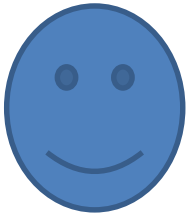
Hide the numbers around a room – how quickly can the pupil find the numbers and put them in the right sequence.

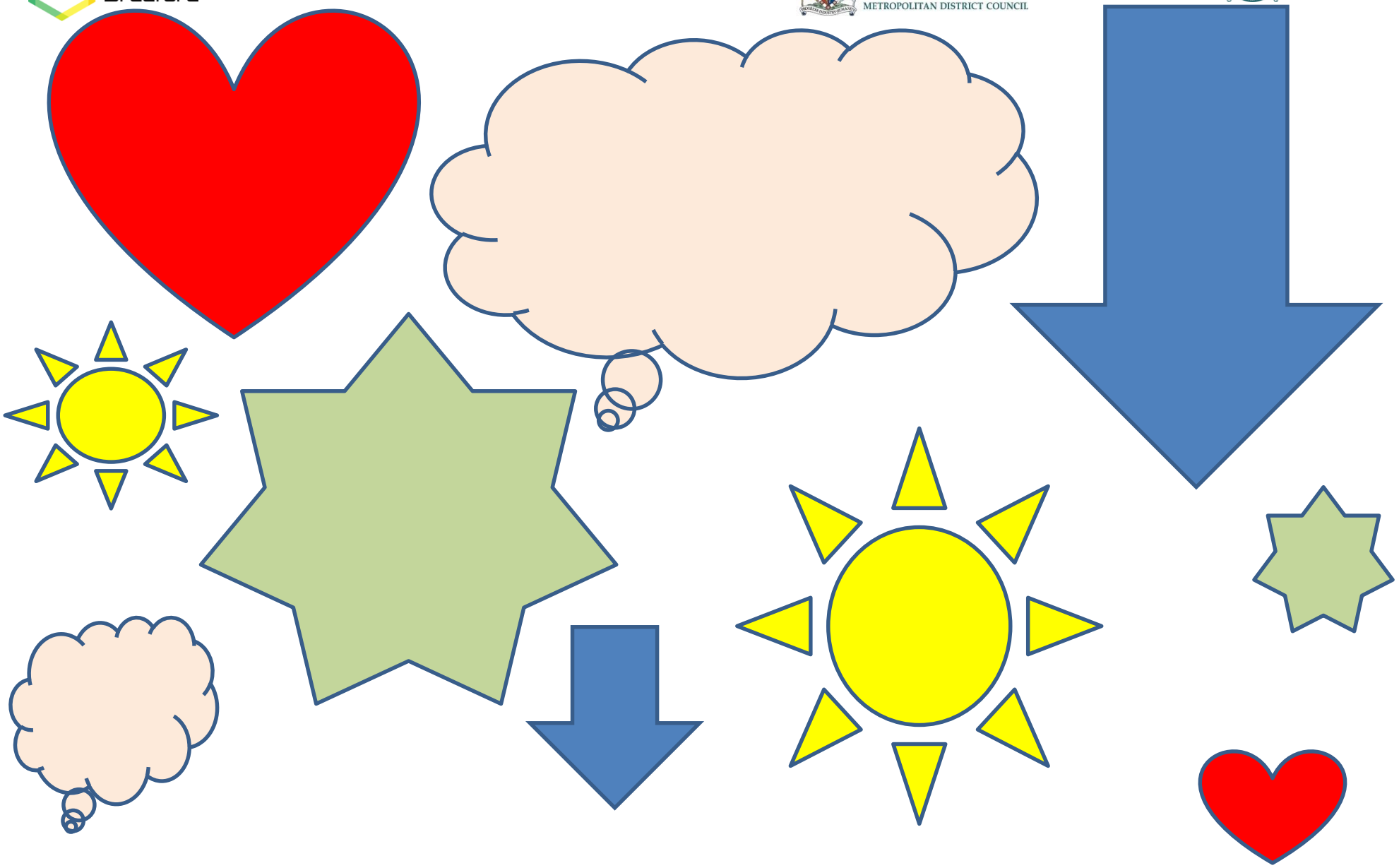
Tracking – make a simple sheet with a target word hidden amongst other letters in a line – can the pupil track along the line with a pen to find the number?

Cereal Words - using cereal like Cheerios or Rice Krispies to form the target number.

Tactile numbers: Made from textured wallpaper or sandpaper
Pupil can trace over the numbers with a finger to practice the correct formation.

Cut out the shapes and ask the pupil to sort them into big and small

BIG 	SMALL 



Place Value

General Strategies

- Start with a concrete concept, move to the pictorial and finally end with the abstract. This will help pupils develop full mastery – i.e. Base 10, Numicon etc.
- Teach your class how to skip-count by twos, threes, fives, and tens. This is an essential concept for pupils to understand before they learn place value.
- Ensure the pupils know that place value is the idea that the value of a digit (0-9) depends on its "place" or position in a number.
- It is important to teach the difference between numbers and digits.
- Show the pupils that it is easier to count in groups of ten.
- Make it visual and experiment with a range visual teaching tools. Use of colours can help to support, i.e. red for hundreds, blue for tens, green for ones.
- One of the easiest ways to help pupils make sense of place value concepts is to help them connect place value to money. Pupils love money and most already understand the idea that 10 pennies, can be exchanged for a 10p, or that ten 10p's can be exchanged for £1.

Websites with useful ideas:

https://www.teachingideas.co.uk/subjects/place-value
https://www.oxfordowl.co.uk/for-home/advice-for-parents/learning-at-home-videos/parent-how-to-videos/how-to-help-with-place-value-videos/
https://www.bbc.co.uk/teach/skillswise/place-value/zbd747h
https://nrich.maths.org/10712

10 minute activities – place value - PKSS5 PKSS6 Y3, Y4

Counting in 10s - Practice counting in 10s using concrete objects such as Base 10 or Numicon shapes to illustrate and ensure they are secure at place value when adding / making tens.

Note - Carry out the following activities with 2 digit numbers until secure. Then introduce counting in hundreds and making 3 digit numbers.

Numicon / Base 10 - Practice making numbers with Numicon / Base 10.

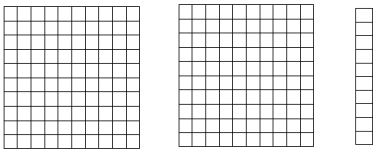
Place value cards - Use place value cards to make numbers – see resources for cards and a guide to using.

Hundred / ten / one chart - Use hundred, tens, ones chart to write / represent numbers – see resources.

Counting in 100s - Practice counting in hundreds and using Base 10 to represent.

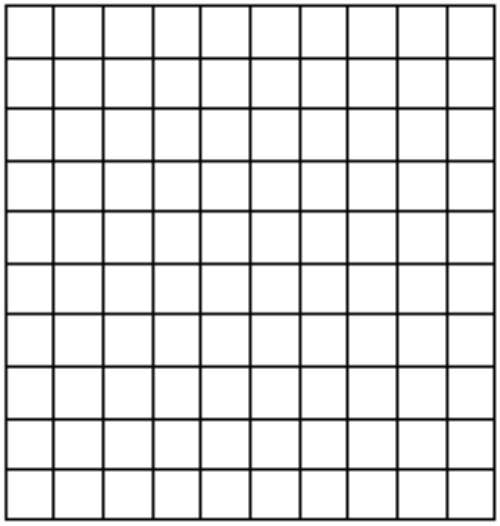
Ensure the pupil can break down numbers into hundreds, tens and ones i.e. give them a number e.g. 426 and they can tell you it has 4 hundreds, 2 tens and six ones.

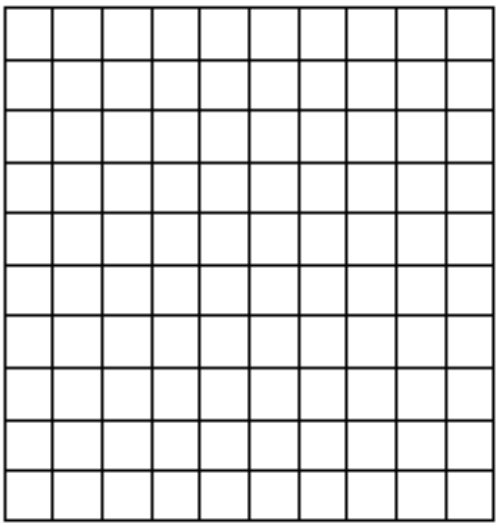
Also check they can give you the number from a visual with for example:
Give the pupil the following resources - 2 hundreds, 1 ten and 2 ones – can they tell you the number? 212

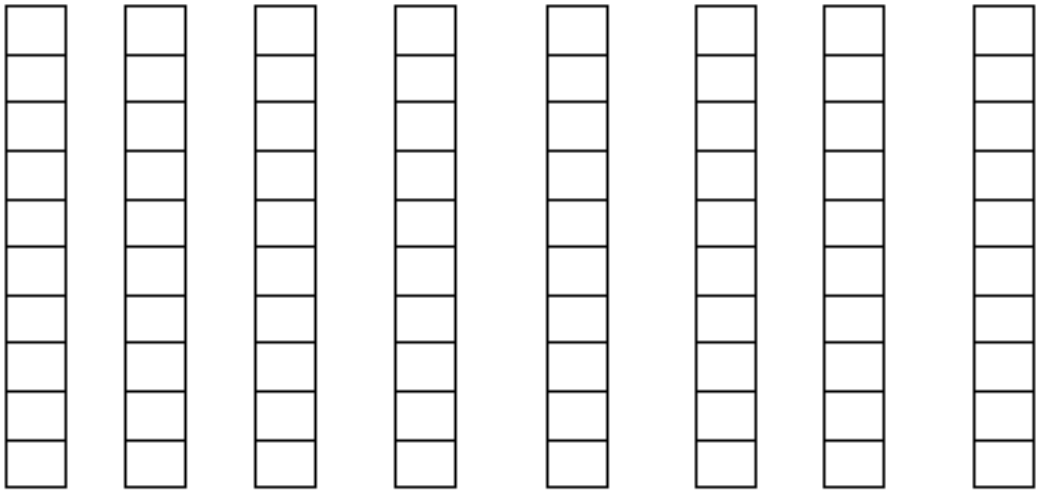


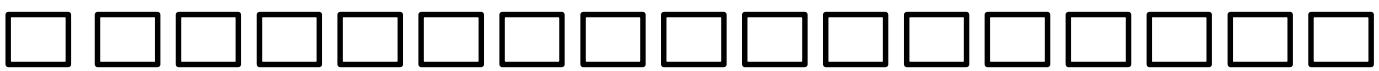
□ □ = _____

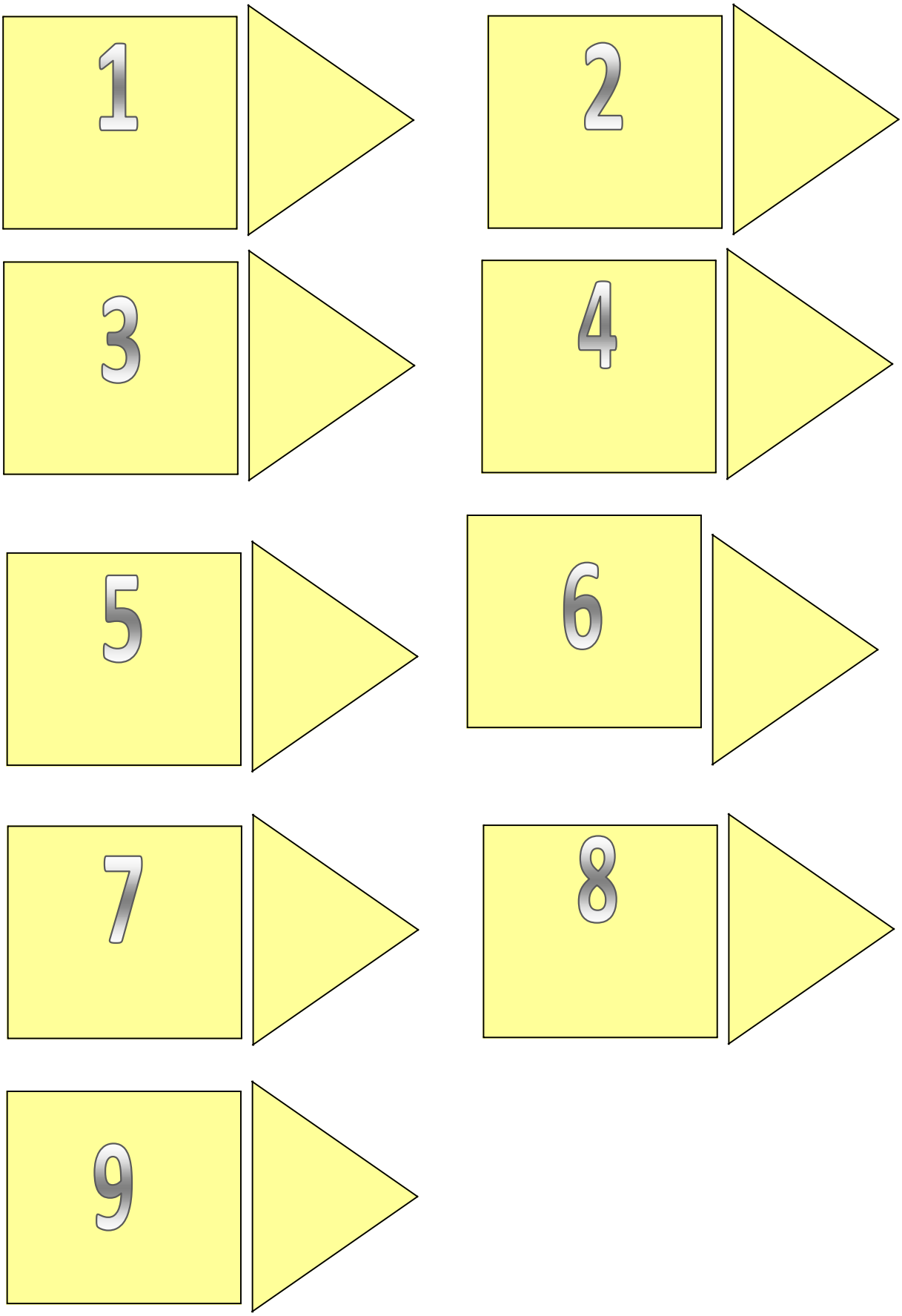
Hundred, tens and ones visuals – to use if Base 10 equipment not available. Print several copies of this sheet and cut out (laminate to make more durable)







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3
4
5
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7
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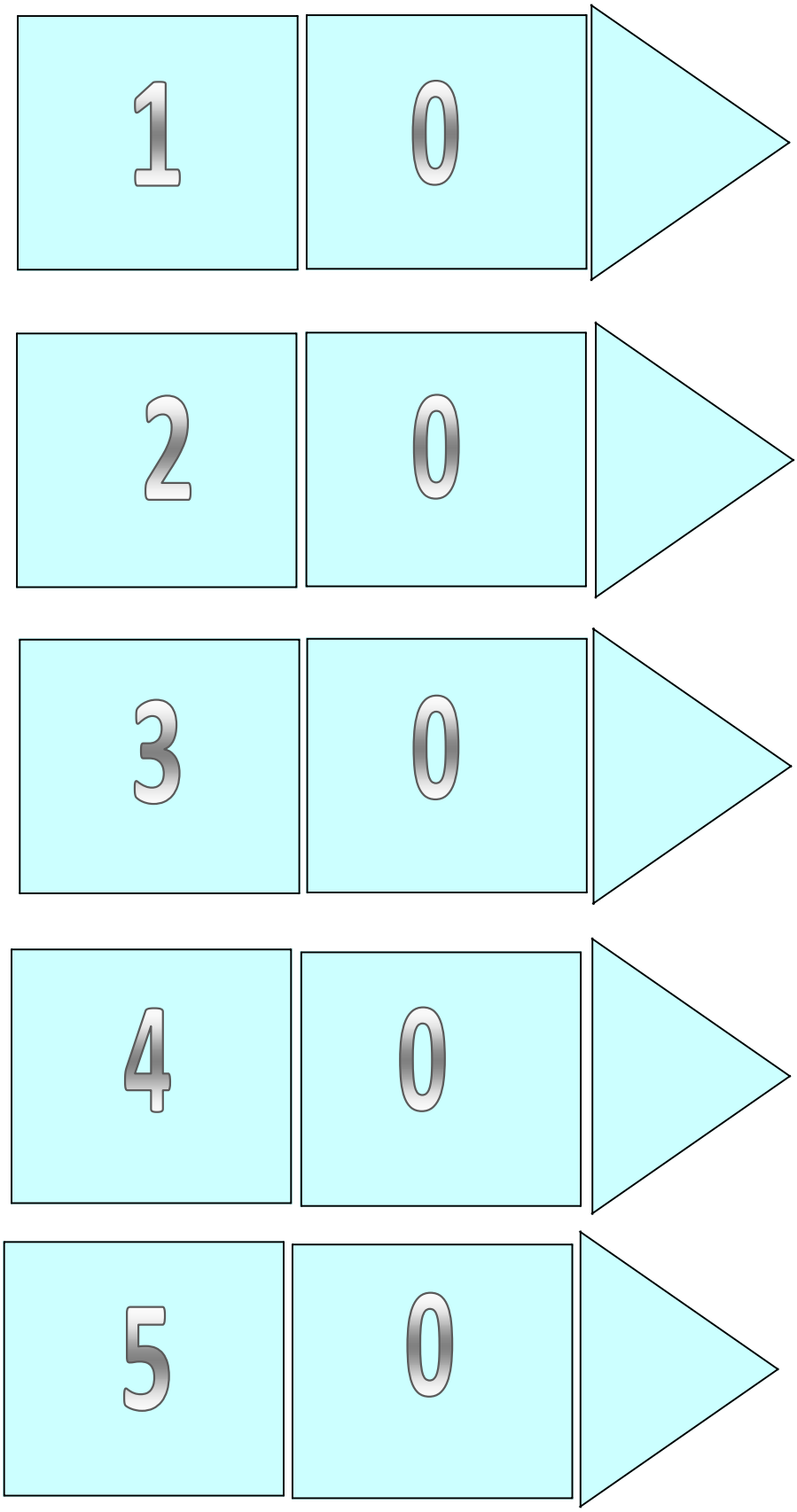
9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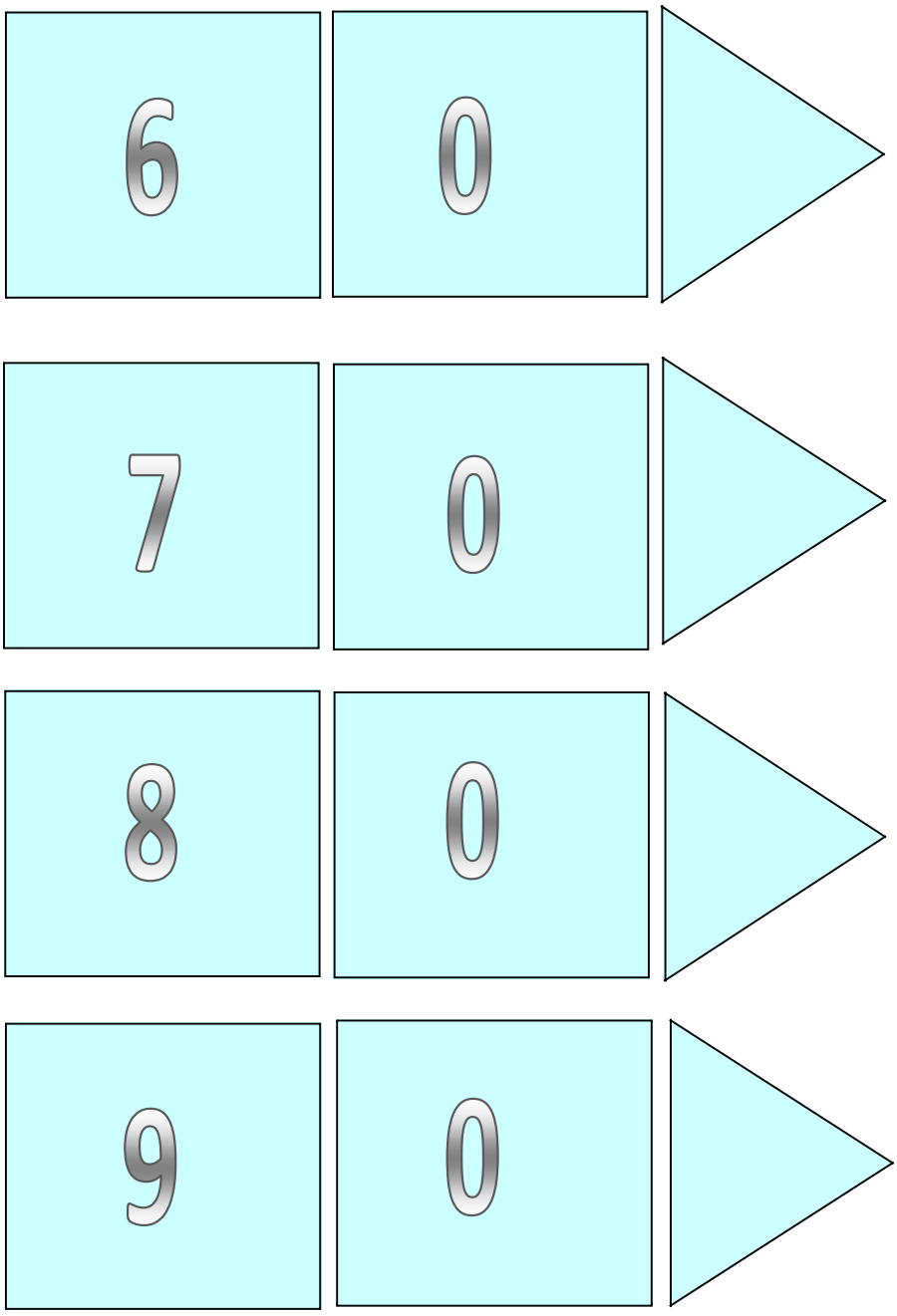
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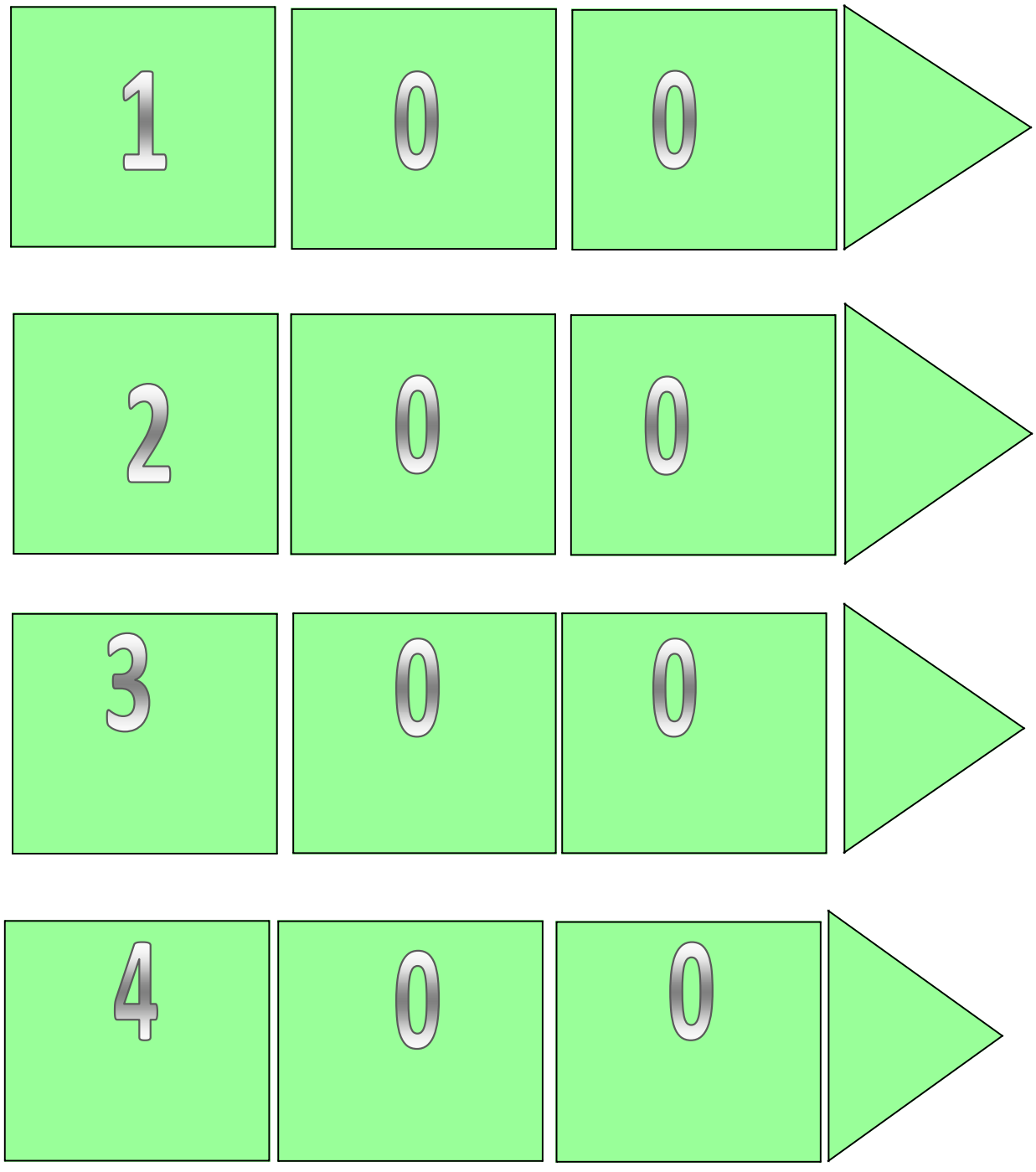
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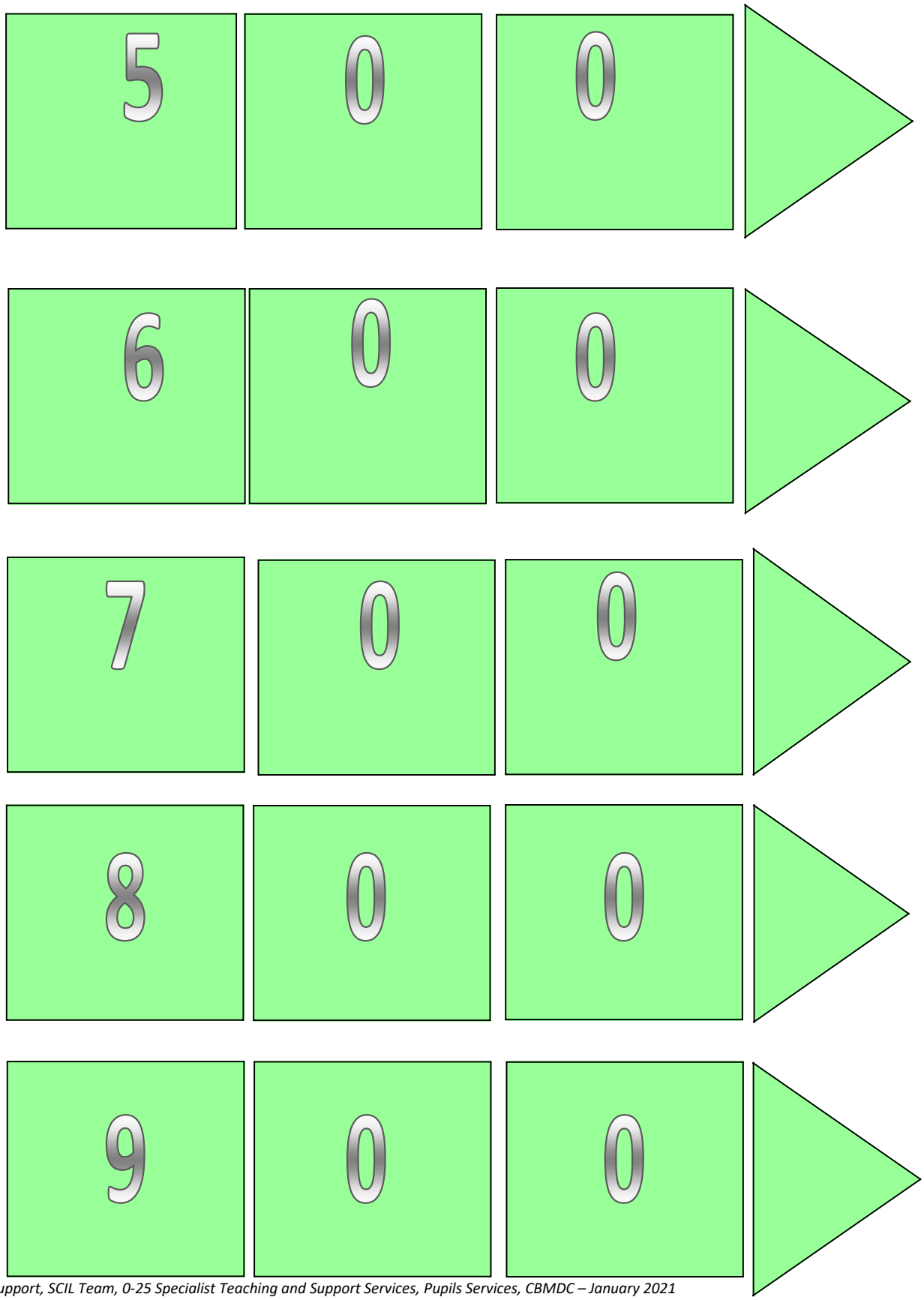

5 0 0
6 0 0
7 0 0
8 0 0
9 0 0

Place Value Card Guide

What are place value cards? Place value cards are a set of cards with an "arrow" or point on the right side. Pupils organize the cards horizontally or vertically to represent numbers. They can overlap cards and line up the arrows to form multi-digit numbers. The colours for the hundreds, tens and ones will be different.

In the set included with this package the 'ones' are yellow, 'tens' are blue and 'hundreds' are green. These place value cards are a follow on from using Numicon or Base 10 resources to the next step of understanding place value which is reading or writing the numbers. The place value cards can be placed on top of each other to make numbers i.e. to make 435 you would place the 400 card at the bottom, then the 30 card on top with the arrows lined up and the 5 on top of the 30 again lining the arrows to clearly show the target number of 435.

The place value cards for hundreds are bigger than the tens cards and the tens bigger than the ones cards.
Activities using the cards to teach place value:

- Ask the pupil to sort the cards into 3 piles – ones, tens and hundreds.
- Begin by asking the pupil to show you numbers represented by one card i.e. '4', '40' or '400'.
- Ask questions about these single cards i.e. how many tens in 40? How many ones in 4? How many hundreds in 300?
- Begin building 2 digit numbers – demonstrate and explain first and then ask the pupil to make numbers i.e. '44' or '39'.
- Work through a series of "show me" activities, in which the pupil at first holds up single arrow cards and then hold up numbers they've built. "Show me 8. Show me 40...60.... How many tens are in 60? Show me 700..." Build a few two-digit numbers. "Show me 11, 12... 46, 47...". Remind your pupil that when they build 46, the 40 is still there. It's 40 + 6. Forty is 4 tens; 46 is 4 tens plus 6. Increase to 3 digit numbers.
- Number Pairs "Show me 35 and 53." Both numbers use a 3 and a 5. Discuss the difference in the value of 5 as it is used in each number. Break the numbers apart to look at their components.
- Introduce the hundreds cards, practice making numbers with three digits – ensure the pupil understands the hundred card represents how many hundreds.
- Games with the hundreds, tens and ones cards - "Show me all the 3-digit numbers you can make with a 3, 5, and 7 in any place." "Show me all the 2-digit and 3-digit numbers you can make using 3, 5, or 7 in any place." After pupils show a few 3-digit numbers, ask them to show a number with zeroes. "Show me 104. Show me 608." In the number 104, the 0 means an absence of tens. We don't need a "zero tens" card to show this. We can show 104 with 100 + 4; when we put them together, we will see a zero in the tens place, from the 100 card. Add and Subtract "Show me 10 more than 13...20 more than 13."

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Addition

General Strategies

- Start with a concrete concept, move to the pictorial and finally end with the abstract. This will help pupils develop full mastery.
- Making the learning fun is key, if they enjoy it and have a sense of success they will be confident to have a go. Praise for effort and not for ability.
- Introduce through story problems and related vocabulary.
- One more/one less is a good way to start the pupil thinking about addition and subtraction.
- Number lines are great visual tools for making the connection between "counting on/back" and addition or subtraction.
- Make it real life and hands on where possible, i.e. if you had 2 bananas and I gave you 2 more, how many would you have? Discuss the steps carried out to find the answer.
- Make it 'hands on'. Many pupils will learn better when they 'do'.
- Break the calculation into small chunks and talk through each part before moving on to the next.
- Provide opportunities to master facts and skills they have learnt. Don't be afraid to repeat and reinforce.
- Provide opportunities for peer learning – sometimes pupils just get other pupils!

Websites with useful ideas:

https://www.teachstarter.com/au/blog/10-easy-simple-addition-activities-pupils/
https://www.bbc.co.uk/cbeebies/grownups/help-your-pupil-with-maths
http://minimaths.club/maxs-marvellous-maths/
https://www.twinkl.co.uk/resources/games-twinkl-go/ks1-games-twinkl-go/maths-ks1-games-twinkl-go
https://www.twinkl.co.uk/resources/white-rose-maths-resources
https://home.oxfordowl.co.uk/maths/primary-addition-subtraction/addition-subtraction-year-1-age-5-6/
https://www.topmarks.co.uk/maths-games/7-11-years/addition-and-subtraction

10 minute activities - addition

PKSS3 PKSS4 PKSS5 PKSS6 **One more**

- Play role play games to establish whether the pupil understands the concept of one more / one less i.e. shops, at snack time, when building bricks. If they don't understand use role play activities to model the one more / one less when playing.
- Use numbers 1 to 5 initially – with the number cards in front of the pupil in the correct sequence – begin by talking about one more and jumping from 3 to 4 for example. See one more resource.

PKSS3 PKSS4 PKSS5 PKSS6 **Make an Adding Machine' using a cardboard box and two tubes** - This is a box with two tubes at the top. Pupils need to insert the correct number of cubes / counters / objects into each tube and the machine will combine them when they drop to the bottom, so that the total can be counted. See picture below. Write the calculation down on a whiteboard to reinforce the understanding of the symbols. This activity also demonstrates that the number of objects is greater when added together. Begin with single numbers to 10 and then when secure move to numbers to 20. To develop understanding of adding 2 two digit numbers use base ten or Numicon resources to feed into the machine – initially with no re-grouping. Link this to place value.

PKSS3 PKSS4 PKSS5 PKSS6**Number line road dice game** - Make addition fun and multi-sensory, see the resource board below. Roll two dice to give the numbers to add and then this simple activity uses a number line and a car with a pointer to help the pupil understand addition. Circle the first number on the number line and ask the pupil to drive the car to that number. Next, the pupil drives the car along the line for the corresponding number on the second dice to get the answer. Discuss that the answer to an addition is always bigger than the original numbers.

PKSS4**Commutative Law** – If 3+2=5 then 2+3 must also equal 5.
To ensure a pupil has a secure understanding of this concept carry out lots of practical examples with concrete objects and use plastic numbers to illustrate. See commutative law model sheet with activities.

PKSS6 – **Procedure plans –** Create visual procedure plans for addition methods.

PKSS5 PKSS6 **Number bonds (begin with number bonds for 5 and develop to number bonds to 10 and then 20)**

- **Numicon** - Begin with number bonds to 5 – how many different ways to make 5 – pupil to explore the Numicon shapes to see how many different ways they can make 5 – do this on top of a five Numicon. E.g. place 2 and 3 numicon shapes on top of the 5 shape, place 5 x one Numicon shapes on a 5 Numicon etc.

- Repeat for number bonds to 10.

- **Flip flap** - A flip flap can be used when folded in different directions to demonstrate all number bonds for 10. See flip flap resource to make your own.

- **Coat hanger and pegs number bonds** - Use a coat hanger with 10 pegs to illustrate the number bonds to 10 – see photo for example.

- **Number bond Eggs** – Using the plastic fillable eggs usually available at Easter time write number bond pairs on an egg i.e. 6 on the top half and 4 on the bottom half. Mix up the eggs and ask the pupil to sort into number bond pairs.

- **Numicon tower** – using a ten number bond shape at the bottom place 10 Numicon pegs onto the 10 Numicon. Continue building the tower by placing two Numicon shapes that equal 10 i.e. 5 and 5 then reinforcing that these make 10 by adding 10 pegs.

- **Number bond pipe cleaner men** - See the picture and make a set of men using a lollipop sticks, googly eyes and pipe cleaners. Use beads threaded onto each leg to represent number bonds to 10 i.e. 3 on one leg and 7 on the other. 

- **Number bond peg matching game** - Match the pegs to the corresponding number bond for 10. See peg number bond resource to make your own.

- **Ladybird counter number bonds** - Make a ladybird to represent each number bond – use the template in the resource section and counters.

- **Lego Tower Number bonds** - Make Lego towers to represent all number bonds for 10.

- **Magnetic numbers and symbols** - Use plastic numbers and symbols to illustrate the number bond calculations – this could be done alongside some of the games above.

One More

Give the pupil a number card to place in the first box, pupil to count out that number of small objects into box 2. Add one more to the set of objects. How many now? Then encourage the pupil to say one more than ____ is ____.

Number
How many?
Add one more, how many now?
One more than _____ is _____

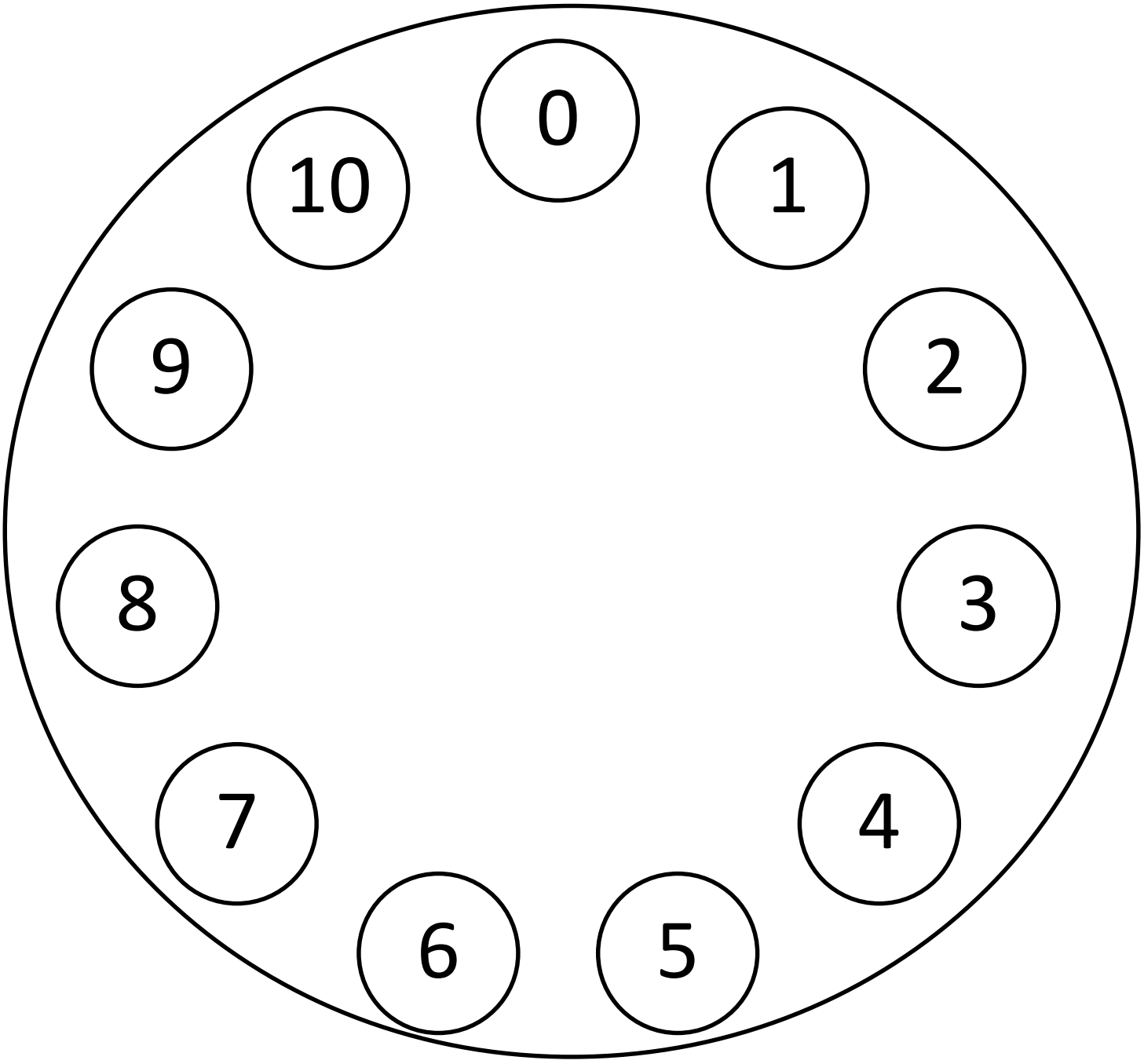
Flip flap for number bonds

Copy onto card. Cut out the squares. Cover them (both sides) with sticky back plastic, keeping the same layout as on the template, but leave a small space between each square. They are now easily folded backwards, to use in quick fire number bond activities. They can be folded in various ways to show every combination for number bonds to 10.

Peg Number Bond Matching Activity

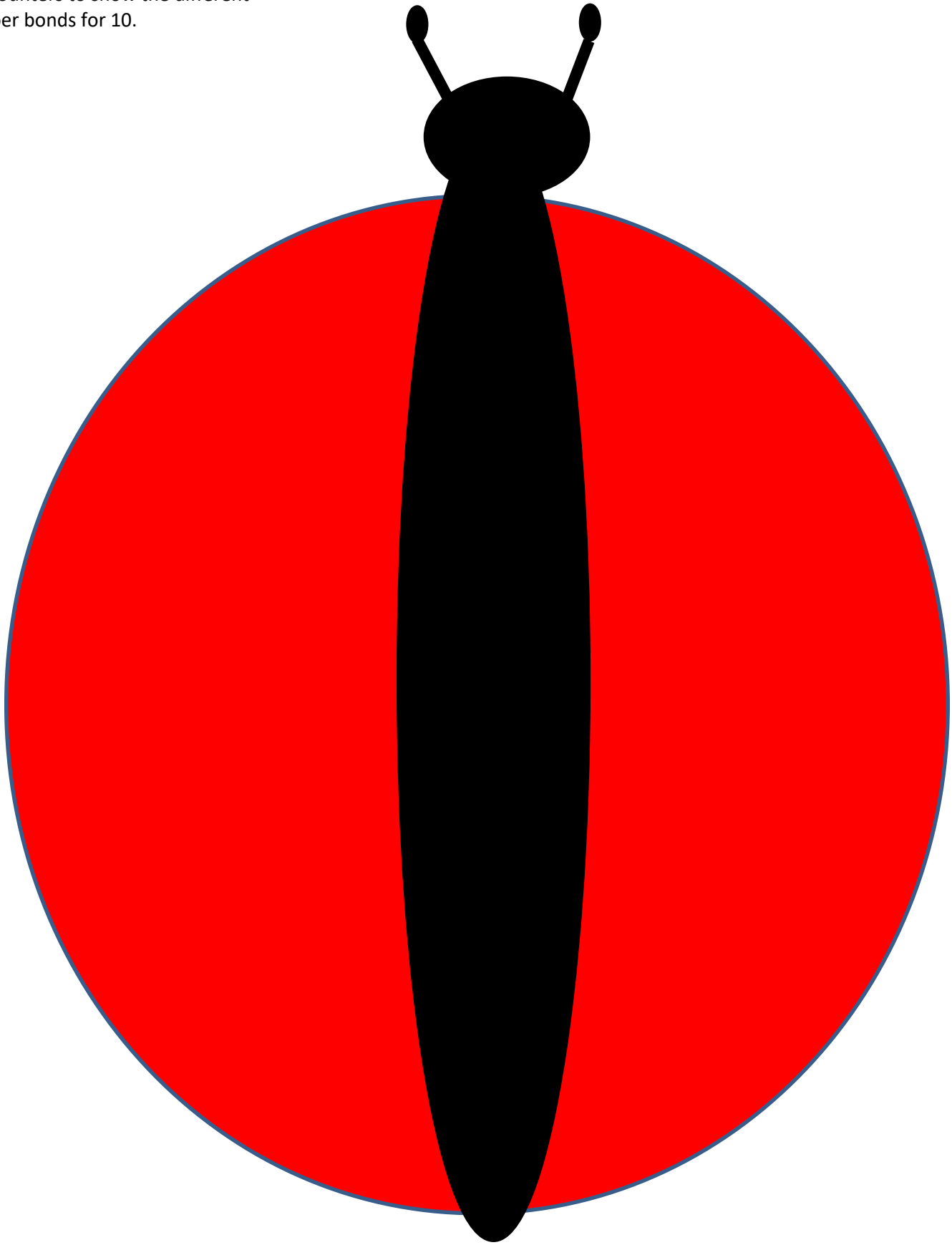
Cut and laminate the large circle. Cut out the number squares and attach each one to a peg. Can the pupil match the peg to the corresponding number bond?



0	1	2	3	4	5
6	7	8	9	10	

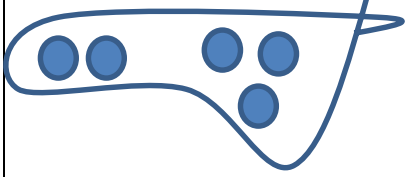
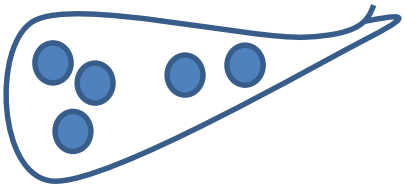
Ladybird Number Bonds

Use counters to show the different number bonds for 10.



Commutative Law

Swap the addition numbers but the answer stays the same

2+3=5	Then	3+2=5
2 + 3 = 5 	is the same as	3 + 2 = 5 
Use counters or cubes to help with these:		
If 4 + 1 = 5	What does	1 + 4 = ?
If 7 + 3 = 10	What does	3 + 7 = ?
If 6 + 3 = 9	What does	3 + 6 = ?

Subtraction

General Strategies

- Making the learning fun is key, if they enjoy it and have a sense of success they will be confident to have a go. Praise for effort and not for ability.
- Introduce through story problems and related vocabulary.
- One more/one less is a good way to start the pupil thinking about addition and subtraction.
- Number lines are great visual tools for making the connection between "counting on/back" and addition or subtraction.
- Make it real life and hands on where possible, i.e. if we were on a bus that had 5 people on and 2 people got off, how many would be left? Discuss the steps carried out to find the answer.
- Make it 'hands on' - pupils often learn better when they 'do'.
- Break the calculation into small chunks and talk through each part before moving on to the next.
- Provide opportunities to master facts and skills they have learnt. Don't be afraid to repeat and reinforce.
- Provide opportunities for peer learning – sometimes pupils just get other pupils!
- Ensure the pupil is secure with addition before introducing subtraction
- Pupils will need to see the connection between addition and subtraction over and over, with hands-on materials and lots of practice, before they can use the addition facts as stepping stones to the subtraction facts.

Websites with useful ideas:

https://www.bbc.co.uk/cbeebies/grownups/help-your-pupil-with-maths
http://minimaths.club/maxs-marvellous-maths/
https://www.twinkl.co.uk/resources/games-twinkl-go/ks1-games-twinkl-go/maths-ks1-games-twinkl-go
https://www.twinkl.co.uk/resources/white-rose-maths-resources
https://www.bbc.co.uk/teach/skillswise/subtraction/zn8bt39
https://home.oxfordowl.co.uk/maths/primary-addition-subtraction/addition-subtraction-year-1-age-5-6/
https://www.topmarks.co.uk/maths-games/7-11-years/addition-and-subtraction

10 minute activities - Subtraction

PKSS3 **Jumping back on the number line** – can do practically with numbered floor tiles, or frogs on lily pads. Focus on the concept of numbers getting smaller when taking away.

PKSS3 **Make it real life** – use objects from around the classroom. Provide oral problems and ask the pupil to complete, i.e. I have 5 balls and you take 3 away, how many will be left? Emphasise the need to physically take away – ask them to talk through the steps. Write down the calculation so they can relate this to what they have done.

PKSS4 **Subtraction Bingo** – This can be adapted to different range of number (up to 5, 10, 20 etc.)
Who can shout Bingo first? Answers to be checked by the Bingo Caller.

PKSS4 **Subtraction grid** – You will need a laminated copy of the grid (either numbers to 20 or Numbers to 10), a set of number cards, small cubes/counters etc. Using the number cards create a subtraction sentence. Ask the pupils to lay appropriate number of counters on the grid then take away the given number. Ask the pupil to find the number card to complete the number sentence. Ask them to talk through the number sentence and how they arrived at their answer.

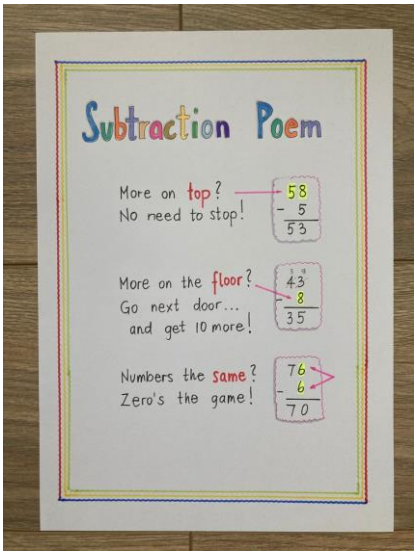
PKSS4 Play dough smash – You will need a laminated copy of the base card, play dough, a set of number cards. Place the number cards to create a subtraction number sentence. Ask the pupil to make the given number of play dough balls. Then ask them to smash the number that is to be taken away. How many balls are left?

PKSS4 Subtraction Slide – using a sandwich bag with a slide zipper, draw a number line across the top of the bag under the zipper. Using the number line move the zipper for each number sentence.

PKSS4 Subtraction Bowling - create bowling pins from plastic bottles. Start with any given number of bottles (depending on numbers the pupil is working with). Create a number sentence by rolling a ball and knocking down balls – how many did you start with, how many left? Ask the pupil to talk it through and record in written form as they go.

PKSS5 True or false? – Provide the pupil with a given number of completed subtraction number sentences (one digit and two digits) Ask the pupil to sort them into true or false piles – they must give reasons for their choice. Provide them with equipment to support their working out.

PKSS5 Subtraction Poem – Use this to support the pupil when beginning column subtraction:



PKSS6 Card/Dice number generator – using a pack of cards (with jokers and picture cards removed), ask the pupil to pick 4 cards (or 6 if doing 3 digit numbers). The pupil can then arrange the cards to create, two, two digit numbers to create a subtraction. Ask the pupil to talk through their working out as they complete. This can also be done with dice.

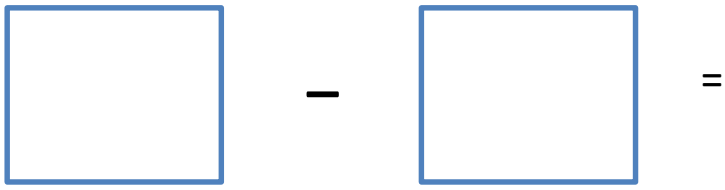
PKSS3 & PKSS6 Going to the shops – Through role play get the pupil to buy items from the shop and work out the change they require from 10p, 20p, 50p. This can be done with coins but also be set out as a column subtraction. Ask the pupil to talk through their working out.

PKSS6 – Procedure plans – create visual procedure plans for subtraction methods.

Subtraction Grid (Numbers to 10)

	–		=	

Subtraction Grid (Numbers to 20)



Play Dough Smash

Place your play dough balls on here

Multiplication and Division

General Strategies

- Start with a concrete concept, move to the pictorial and finally end with the abstract. This will help pupils develop fully mastery.
- Arrays: These are one of the earliest models used to help understand the concept of multiplication and division. They help pupils see the connection between the two operations, and pupils can visually see the "grouping" or "sharing" concept. Arrays are a great way to help pupils memorise their multiplication and division facts, instead of just using flash cards.
- Bar Models: Bar models are based on the concept of equal groups and part-part-wholes. This model helps pupils in moving away from the concrete phase and begins to help them understand the pictorial stage. Bar models are a great way to help pupils show their thinking when problem solving, especially when solving two-step problems.
- Number Lines: Number lines allow pupils to begin understanding the abstract stage of multiplication and division. They can "skip" forwards or backwards to represent an operation. Number lines are great models to help pupils show their thinking and explain their reasoning.

10 minute activities

Can be used in PKSS2 PKSS3 PKSS4 PKSS5, PKSS6 Y3, Y4

PKSS6 **Timetable Track** – colour in the numbers of the target timetable on a number line – talk about the pattern it makes – count out concrete objects alongside each coloured in number – this then supports with the use of arrays when teaching division.

PKSS6 **Singing –** there is a wide range of timetable songs / videos on YouTube**.**

PKSS5, PKSS6 Teach times tables in a multisensory way looking for patterns, using colour coding, verbalising using rhythm and rhyme, finger tables and singing time tables.

2	5	10
4	10	20
6	15	30
8	20	40
10	25	50
12	30	60
14	35	70
16	40	80
18	45	90
20	50	100
22	55	110
24	60	120

PKSS5, PKSS6 Count on fingers – whether you do it by folding, unfolding or gently tapping your fingers on the desk.

PKSS5, PKSS6 Use apparatus/ count in 2s, 5s and 10s and colour in a 100 square. Point out the pattern and keep as a visual prompt.

PKSS5, PKSS6 Use dominoes to show doubles and halves.

PKSS5, PKSS6 Practice skip-counting in 2s, 5s and 10s. To make it fun skip count while tapping on library book spines, walking the stairs up and down, jumping on the playground.

PKSS5, PKSS6 Multiplication tables - Skip-counting in 2s, 5s and 10s gives reference points in the multiplication grid below. Pupils can find nearest fact that they know (in yellow) and work from there.

PKSS5, PKSS6 Tips:
To multiply by 2 add the number to itself (example 2 x 9 = 9 + 9) = two lots of 9
To multiply by 10 put a zero after a number not 10 (example 2 x 10 = 20)
When multiplying by 5 - the last digit always goes 5, 0, 5, 0,

- is always half of 10 x (example: 5 x 6 = half of 10 x 6= half of 60=30)
- is half the number times 10 (example: 5 x 6 = 10 x 3 = 30)

Websites with useful ideas:

https://www.twinkl.co.uk/resources/numeracy-maths/calculating - has a range of resources to support the teaching of multiplication and division.
https://thirdspacelearning.com/blog/teach-times-tables-pupils-learn-instant-recall-ks1-ks2/
https://www.teachingtime.co.uk/
https://www.teachingideas.co.uk/subjects/multiplication
https://www.teachingideas.co.uk/subjects/division
https://www.topmarks.co.uk/Search.aspx?q=multiplication
https://www.topmarks.co.uk/Search.aspx?q=division
https://www.topmarks.co.uk/maths-games/5-7-years/multiplication-and-division
https://mathsframe.co.uk/en/resources/category/7/multiplication-and-division
https://www.bbc.co.uk/bitesize/topics/zqbg87h
https://www.bbc.co.uk/bitesize/topics/znj7hyc
https://home.oxfordowl.co.uk/maths/primary-multiplication-division/
https://www.stem.org.uk/resources/community/collection/413303/multiplication-and-division
https://www.teachitmaths.co.uk/ks3number/multiplication-and-division/tags/2961
https://www.learnamic.com/learn-multiplication-division
http://www.snappymaths.com/multdiv/multdiv.htm

Multiplication Resources

Multiplication Grids

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

x	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Measures – Time

General Strategies

- Introduce the concept of time slowly, in small steps, so pupil's working memory is not overloaded with too much at once.
- Before introducing the pupils to a clock face, start with the general concept of time – morning, afternoon, evening. Start by talking about activities that happen at different times of the day that they can relate to, i.e. breakfast time in the morning, bedtime in the evening.
- First make sure that the pupil really understands that an analogue clock face is just a special kind of number line. This can be done by writing the numbers one to twelve on mini post its (or similar), then display them horizontally in a line from 1 to 12, equally spaced, with a gap in between each one.
- Instead of teaching time to the pupil using both the hour and minute hand at the same time, start by teaching it using the hour hand only. When this is securely understood, you should introduce the minute hand.
- Separate out learning how the hour hand works and learning how the minute hand works.
- If the pupil gets stuck, back track and consolidate the previous step.
- It's easier to learn the time on an analogue clock rather than a digital one although pupils may be more familiar with a digital clock.
- Practise telling the time every day in class (using minutes to the hour) so that this becomes something the pupil can do easily and automatically.

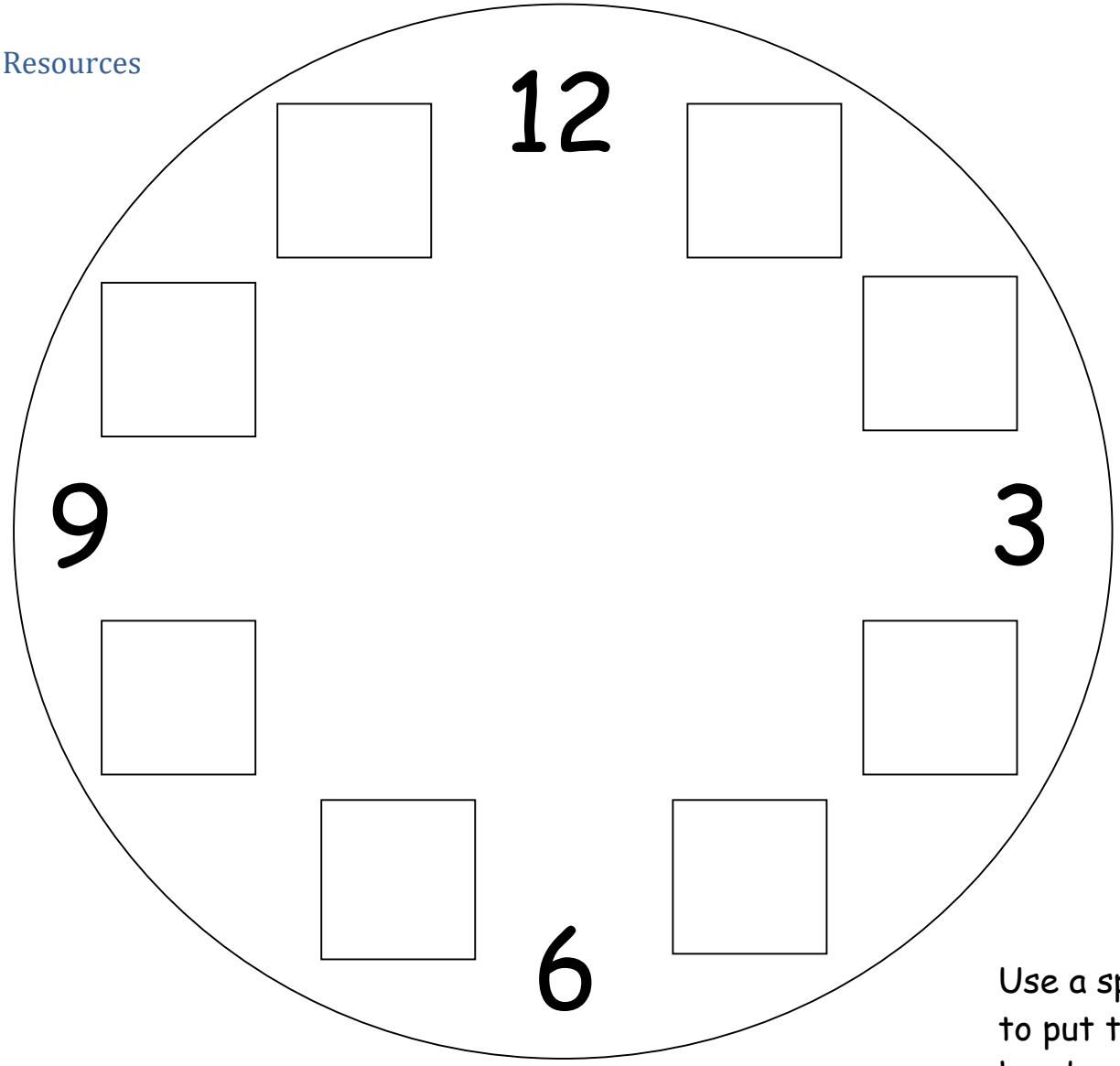
10 minute activities

Can be used in PKSS1 PKSS2 PKSS3 PKSS4 PKSS5 PKSS6

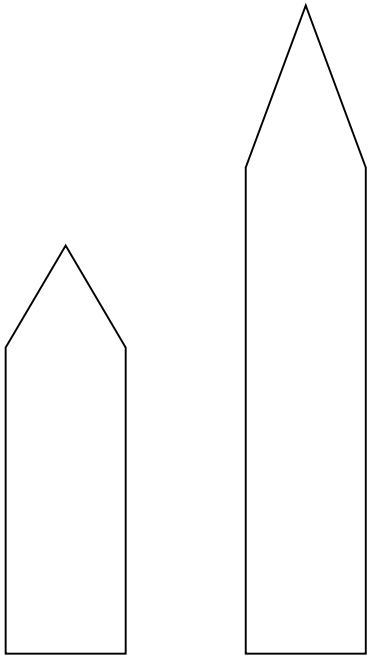
- PKSS1 Class visual timetable– go through each morning – use key vocab 'before', 'after', 'next' and times of the day e.g. afternoon, lunchtime, home time.
- PKSS3 Class calendar with days of the week, months of the year and seasons.
- PKSS3 Create a personalised visual timetable for the week – what each pupil does out of school.
- PKSS3 Class birthday chart – think about key events that happen in different months of the year. Link to seasons of the year. Create a class display board – make it as visual as possible.
- PKSS3 PKSS4 PKSS5 Matching pairs – personalised days of the week with an activity the pupil does on each day of the week. Match word to picture of activity. Put them in order from Monday to Sunday.
- PKSS4 PKSS5 Read books such as, 'The Hungry Caterpillar', 'Today it is Monday', 'Cookie's Week', that focus on days of the week. Emphasise the order of the days of the week. Relate to activities the pupils do. Create a timetable of activities and display in the classroom.
- PKSS4 PKSS5Choose and sing 'days of the week' songs (there are lots to choose from on YouTube).
- PKSS4 PKSS5 Days of the week cards – each day to be written on a different coloured piece of card to help the pupil remember. Put the cards around the classroom with the word facing towards the wall – can they find the cards and remember which day of the week is hidden? Once they have found them all can they order them?
- PKSS4 PKSS5 PKSS6 Loop cards – with analogue, digital times. Can make more difficult by making the following card a given number of minutes after.
- PKSS4 PKSS5 PKSS6 Time bingo – days of the week to activity; analogue to digital; analogue to analogue; digital to digital.
- PKSS4 PKSS5 PKSS6 Time jigsaws – with analogue, digital, written time for each given time.
- PKSS4 PKSS5 PKSS6 Use individual clocks to show a given time 'Show me' game.
- PKSS4 PKSS5 PKSS6 Clock walkabout – have a walk around school and locate different clocks at different times of the day.

Websites with useful ideas:

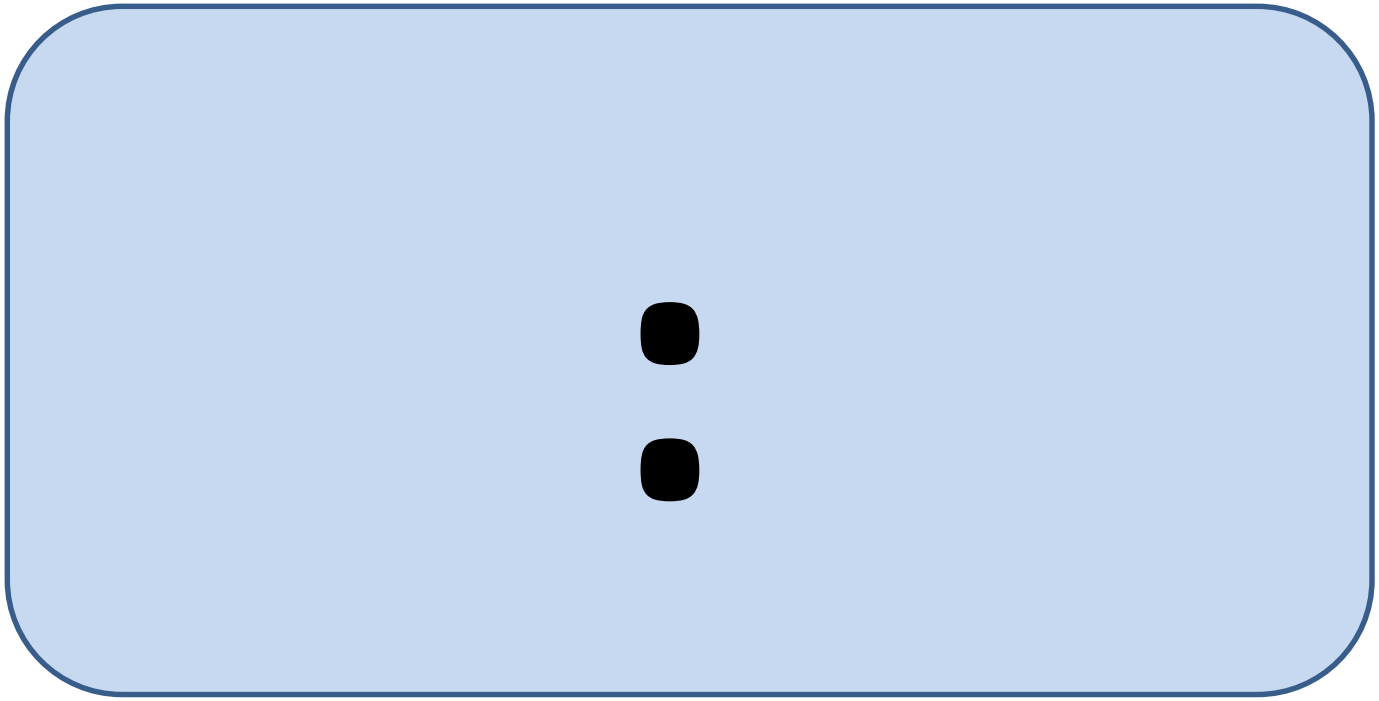
https://www.twinkl.co.uk/resources/numeracy-maths/shape-spaces-and-measures/time - has a range of resources to support the teaching of time across KS1 and KS2
https://thirdspacelearning.com/blog/how-to-teach-telling-time-ks1-ks2-activities/
https://www.teachingtime.co.uk/
https://www.teachingideas.co.uk/subjects/time
https://www.topmarks.co.uk/Search.aspx?q=telling+time
https://mathsframe.co.uk/en/resources/resource/116/telling-the-time
https://www.bbc.co.uk/bitesize/topics/zhk82hv/articles/zcmdwxs
https://www.bbc.co.uk/bitesize/topics/zm4k7ty/articles/zbjbbdm
https://www.busythings.co.uk/blog/teaching-pupils-how-to-tell-the-time-hints-and-tips/
https://www.scholastic.com/teachers/blog-posts/genia-connell/10-quick-easy-and-fun-ways-practice-time-skills/
Maths Made Easy – The Book of Time by Kathleen Paterson
https://www.egon.co.uk/page/maths-made-easy



1	2	3
4	5	6
7	8	9
10	11	12

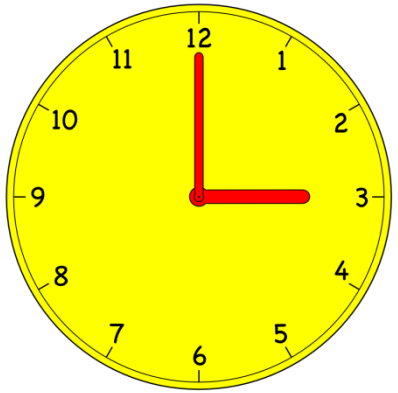
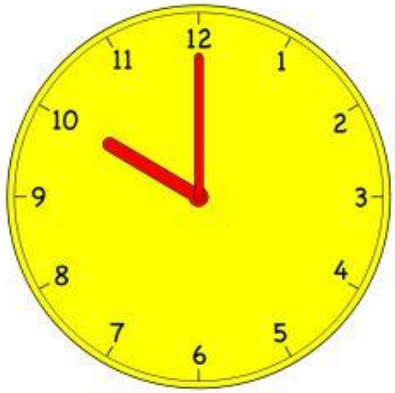


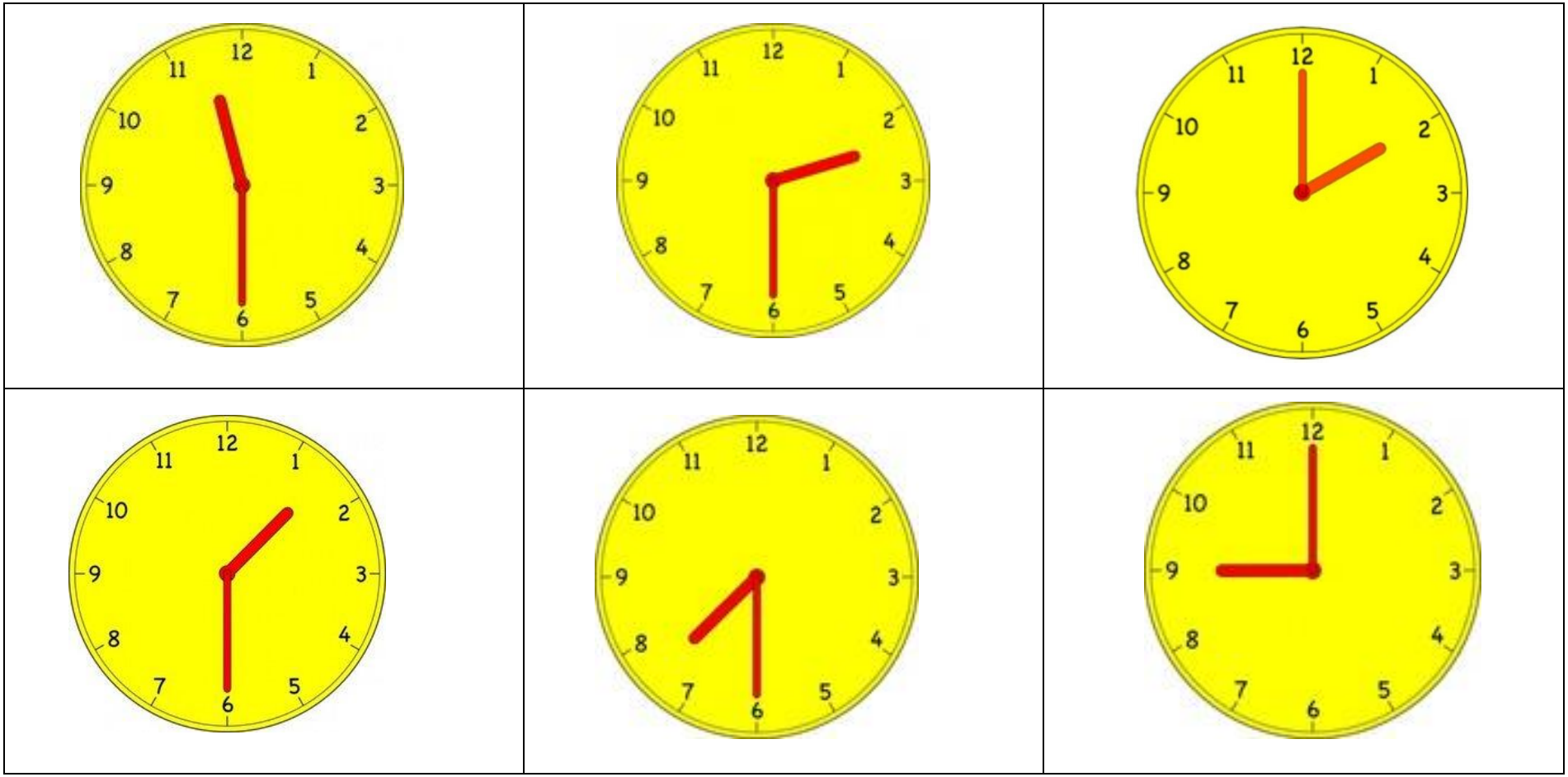
Use a split pin to put the hands on the clock.

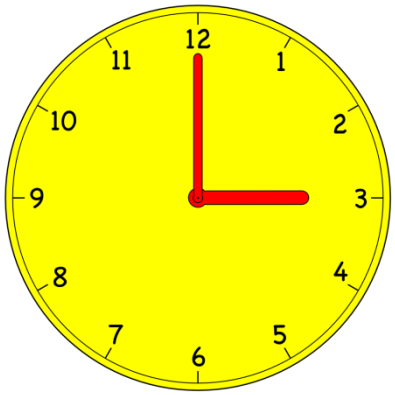
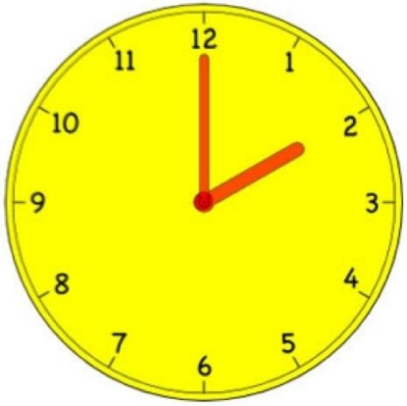


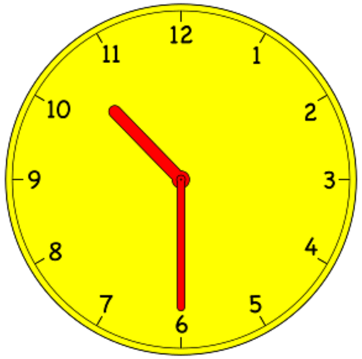
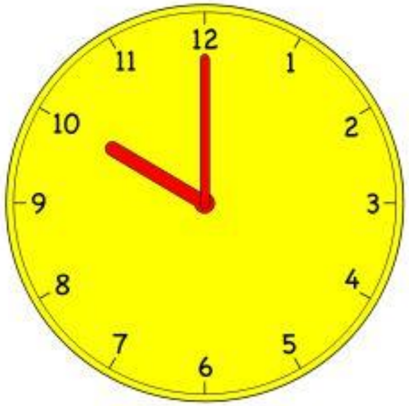
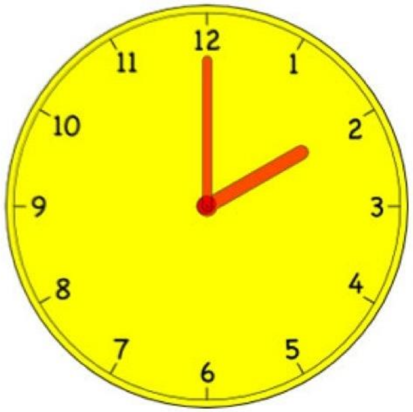
Laminate this digital clock and use a whiteboard marker to write the time.

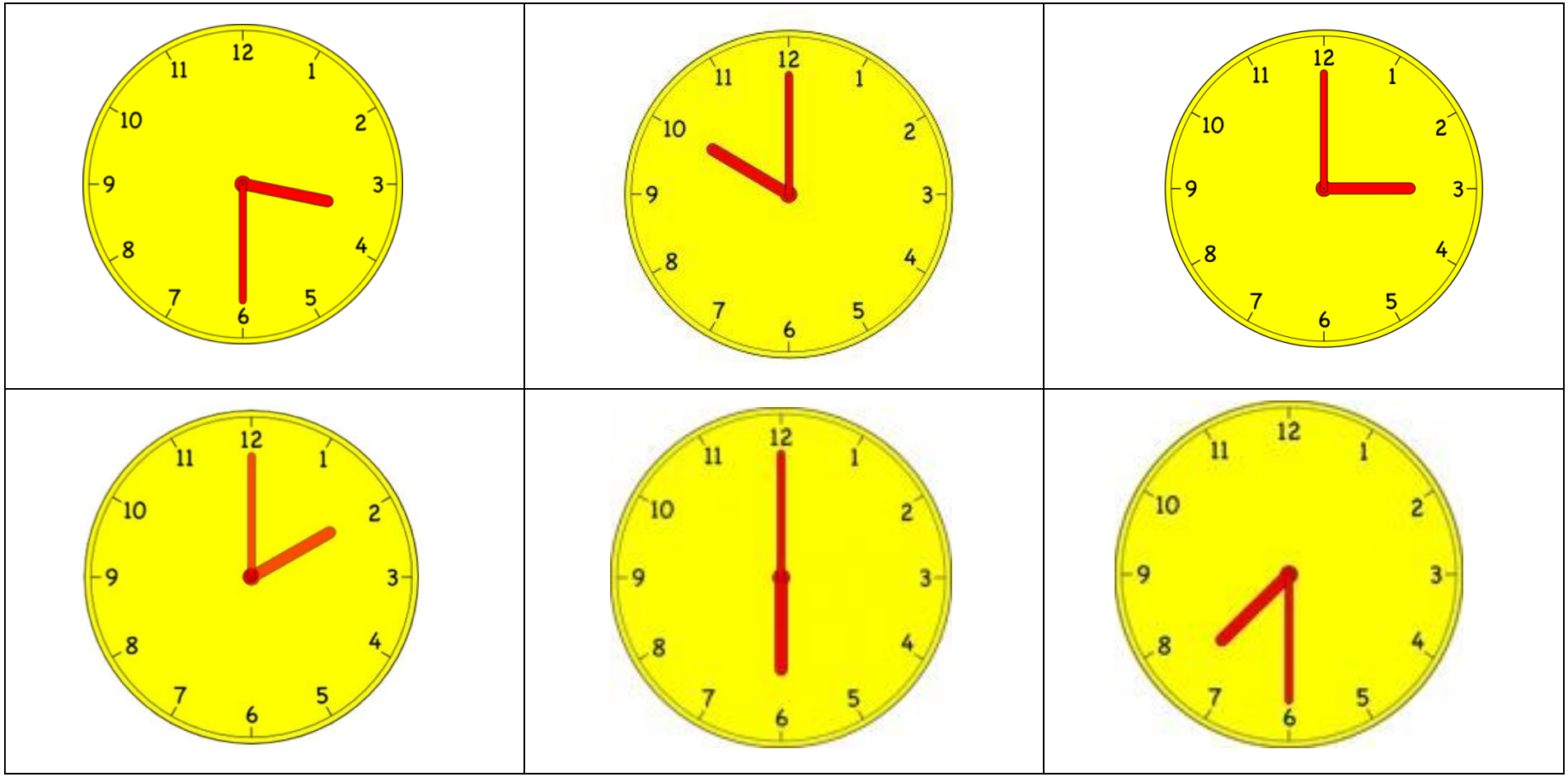
Time Bingo

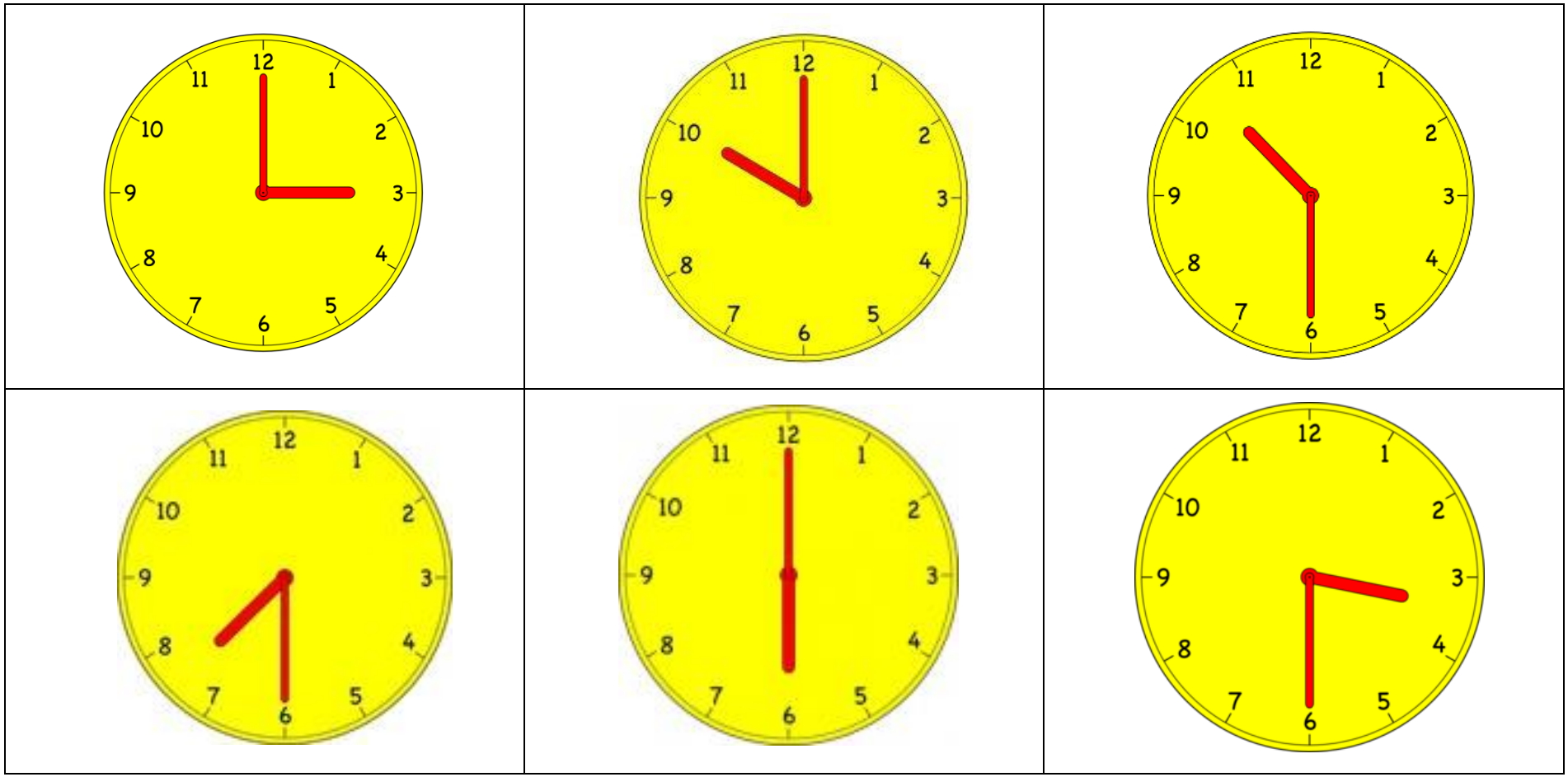
		
		



 12 1 2 3 4 5 6 7 8 9 10 11	 12 1 2 3 4 5 6 7 8 9 10 11	 12 1 2 3 4 5 6 7 8 9 10 11
 12 1 2 3 4 5 6 7 8 9 10 11	 12 1 2 3 4 5 6 7 8 9 10 11	 12 1 2 3 4 5 6 7 8 9 10 11


12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11


12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11
12 1 2 3 4 5 6 7 8 9 10 11

3:30	10:00	3:00
2:00	6:00	7:30
10:30	2:30	1:00
11:30	1:30	9:00

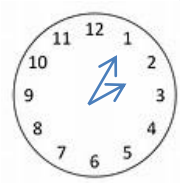
three thirty	ten o'clock	three o'clock
two o'clock	six o'clock	seven thirty
ten thirty	two thirty	one o'clock
eleven thirty	one thirty	nine o'clock

Time Jigsaw

Cut out the shapes and ask the pupil to match them with one written, one digital and one analogue time

five past two

2:05



half past seven

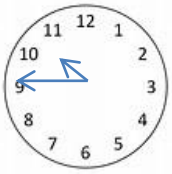
7:30

nine o'clock

9:00

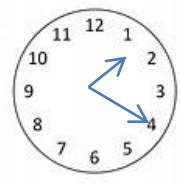
quarter to

10:45



twenty past one

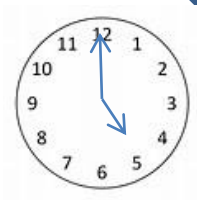
1:20



Cut out the shapes and ask the pupil to match one written, one analogue and one digital time

five o'clock

5:00



ten o'clock

10:00

eight o'clock

8:00

half past ten

10:30

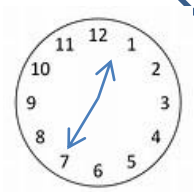
half past eight

8:30

Cut out the shapes, jumble them up and ask the pupil to match one written, one analogue and one digital time.

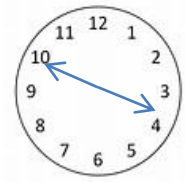
twenty five to one

12:35



ten to four

3:50



five to six

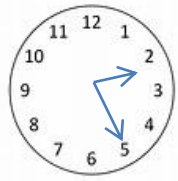
5:55

ten past five

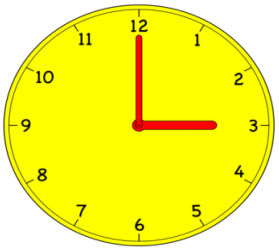
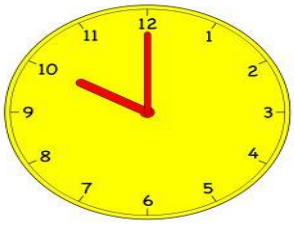
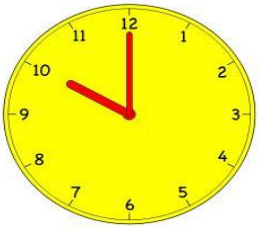
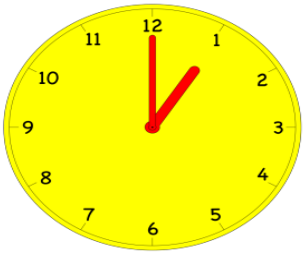
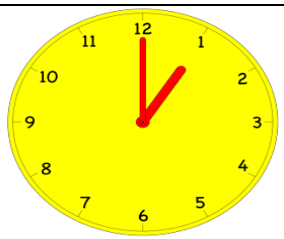
5:10

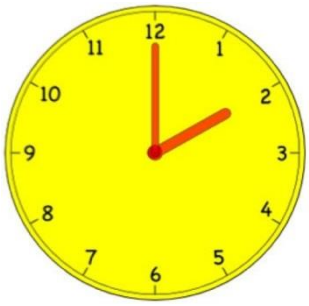
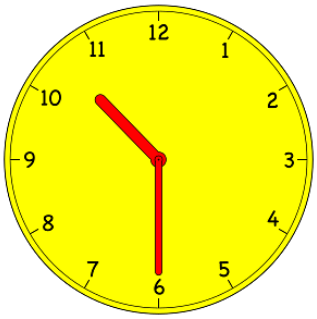
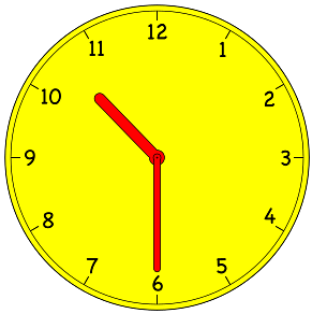
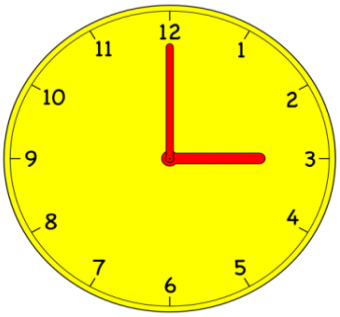
twenty five past two

2:25



Time Loop cards

I have: 	Who has: seven thirty
I have: seven thirty	Who has: 
I have: 	Who has: 2:30
I have: 2:30	We has: 
I have: 	Who has: eleven thirty

I have: eleven thirty	Who has: 
I have: 	Who has: nine o’clock
I have: nine o’clock	Who has: 
I have: 	Who has: 6:00
I have: 6:00	Who has: 

Measures – Money

General Strategies

- Support knowledge and understanding through practical experiences that money is a form of exchange that can be used to pay for goods and services and to measure the value of things.
- Encourage pupils to identify money and think about different size, shape and colour of coins. Make connections that units of money have different values and that can be used to pay for different things. Encourage discussion that size doesn't count - it's the denomination of the money that matters. Support knowledge and understanding of pound (£) and pence (p).
- Encourage collaborative learning as much as possible – encourage exploration and discussion and support their knowledge about paying certain amounts using different coins and giving change.
- Relate to real life where possible – most of the pupils' experiences of money will be outside of the classroom, so links need to be made for the pupil and emphasise where/how these skills will be useful.
- Make connections to other areas of maths including number, addition, subtraction, multiplication, division and fractions.

10 minutes activities
Can be used in PKSS1 PKSS5 PKSS6,

- PKSS1 Give the pupil objects/toys/plastic fruit or vegetables and some coins and ask the pupil to play shop. Demonstrate the concept of transaction in role plays e.g. exchanging a coin for an item, or one item for another during a role-play activity.
- PKSS5 Ask the pupil to match coins and sort them by colour, shape and size. Explore both sides of the coins and look at their denominations. You could ask them to match real coins with the picture provided (no.2). You could also show the picture provided to the pupil and ask them to name or point to different coins.
- PKSS6 Show to pupil examples of pound (£) and pence (p) coins and ask the pupil to find matching coins from a pile of coins. You could ask to sort them into two groups. They could use the picture provided (no.2) and point to pound coins and pence coins.
- PKSS6, Give the pupil real coins or show the pictures provided (no.3) and ask the pupil to choose three different combinations of coins to make 10p, 20p, 50p and £1.
- PKSS6 Give the pupil a variety of coins so they can choose the amount they need to pay for each fruit (no.4). Find other objects around school and ask pupils to price them and then play shop.
- PKSS6 Give the pupil real coins or show pictures provided (no.5). Explain that there was a group of pupils who bought objects for different prices and were given change from a 10p and 20p coin. Each of these pupils had a 10p coin - Jake spent 2p, Fred spent 5p, Azim spent 7p, Jo spent 9p. Ask the pupil how much change each of the pupils should be given? Repeat the task with a 20p coin - Hannah spent 11p, Matt spent 13p, Ben spent 15p, Sam spent 18p. How much change was each pupil given from 20p? One of the techniques for making change is counting forward from the amount spent to the amount tendered. An alternative technique is the subtraction method.

Websites with useful ideas:

- https://twinkl.co.uk – has a range of resources to support the teaching of money
- https://www.bbc.co.uk/teach/supermovers/ks1-maths-money/zht4nrd
- https://nrich.maths.org/2586
- https://www.teachingideas.co.uk/money/the-money-pack
- https://www.bbc.co.uk/bitesize/topics/zp8dmp3
- http://www.primaryresources.co.uk/maths/mathsD2.htm
- http://www.mathematicshed.com/maths-money-shed.html

Money Resources

Picture no.1 – Methods of payment

Picture No.2 Denominations of coins - (coins have two sides)

Picture no. 3

Use different coins to make the same amount

Choose three different combinations of coins to make 10p

1._____

2._____

3._____

Choose three different combinations of coins to make 20p

1._____

2._____

3._____

Choose three different combinations of coins to make 50p.

1._____

2._____

3._____

Choose three different combinations of coins to make £1

1._____

2._____

3._____

Picture no.4

Picture no.5

Which coins will you use to give change for 10p?

All the pupils have 10p	What coins will you give them in change?
Jake spends 2p	
Fred spends 5p	
Azim spends 7p	
Jo spends 9p	

Which coins will you use to give change for 20p?

All the pupils have 20p	What coins will you give them in change?
Hannah spends 11p	
Matt spends 13p	
Ben spends 15p	
Sam spends 18p	

Measures – Geometry

General Strategies

- Support knowledge and understanding through practical experiences, using a range of different equipment including models and images of 2D and 3D shapes.
- Encourage collaborative learning as much as possible – encourage exploration and discussion. Opportunities to discuss their thinking and share reasoning of choices will help to support understanding.
- Relate to real life where possible – most of the pupils' experiences of shapes will be outside of the classroom, so you need to make the links for the pupil and emphasise where/how these skills will be useful.
- Encourage the pupil to think about where they might come across different shapes and how they are similar and different to each other.

10 minute activities
Can be used in PKSS2 PKSS3 PKSS4 PKSS5 PKSS6

- PKSS1 Give the pupil coloured objects and ask them to sort them by colour. You could do this with any object including Lego, Duplo, blocks, pencil crayons, coloured cards etc. You could have different trays/boxes for them to sort the objects into.
- PKSS2 Give the pupil cards of 2 separate objects (block, cup or similar), start a pattern and ask them to continue it. You could also do this with any real life object as long as you keep it to 2 objects at this stage.
- PKSS2 Give the pupil big cubes and small cubes and ask them to put all the small cubes together. You could choose any object as long as you can get several big and small ones for the pupil to sort. They could sort them into different boxes or bags to help them visualise the separation.
- PKSS3 Show the pupil a picture and them to pick out some common shapes (e.g. Can you find a square? Can you find a triangle?)
- PKSS4 Give the pupil flashcards of a cup and a block (or any pictures) and see if they continue a slightly more complex pattern (block, block, cup, block, block, cup).
- PKSS4 Use flashcards to help the pupil secure the names of different shapes. Put flashcards faced down on the table; ask them to choose one at a time and name the shape.
- PKSS4 Have a number of flashcards that are the same shape and ask the pupil to find all the circles, squares etc.
- PKSS4 Complete worksheet finding shapes by colouring all the squares one colour, circles another etc.
- PKSS5 Choose one flashcard at a time, give the pupil clues to help them guess the shape (no of sides, straight or curved edges etc.) Swap so they are the person giving clues.
- PKSS5 Go on a 'shape treasure hunt' around the classroom or school writing/drawing/taking photos of the different shapes they can find.
- PKSS5 Use bean bag shapes and play 'catch the shape' where the pupil throws the shape to you, saying their name as they throw it. Or you could throw the shape to them and they have the say the name as they catch it.
- PKSS5 Using model shapes put one inside a bag. The pupil has to feel the shape and try to guess what it is.
- PKSS5 Show the pupil images of real life shapes (clocks, road signs etc.) and see if they can recognise the shape.
- PKSS5 Play 2D/3D shape bingo or dominoes.
- PKSS6 Use models of shapes (particularly for 3D) ask the pupil to tell you the number of sides, edges and corners. You could also ask whether they have curved or straight sides.
- PKSS6 Investigate whether 3D shapes roll or slide. Ask the pupil to make a prediction then push them one at a time down a ramp and see what happens.

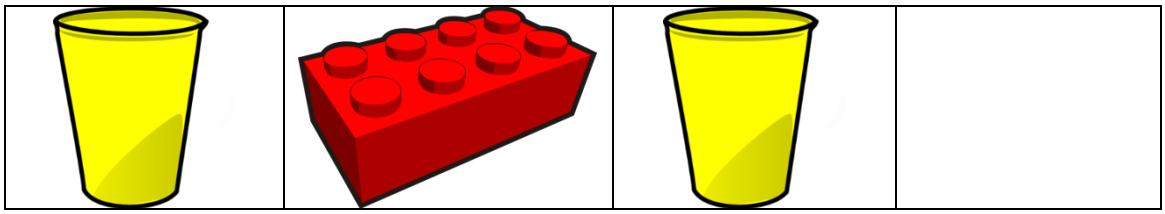
- PKSS6 Separate shapes into 2 groups: curved edges or straight edges. Give the pupil pictures or model shapes and ask them to put them into 3 piles: curved edges, straight edges or both. You could use hoops or string to make a Venn diagram for them.
- PKSS6 Cut out shapes on paper and see if the pupil can fold them to make a line of symmetry.
- PKSS6 Give the pupil a picture containing geometric shapes and see if they can recognise any shapes that have right angles.
- PKSS6 Use a protractor to find out whether shapes have a right angle or not.

Websites with useful ideas:

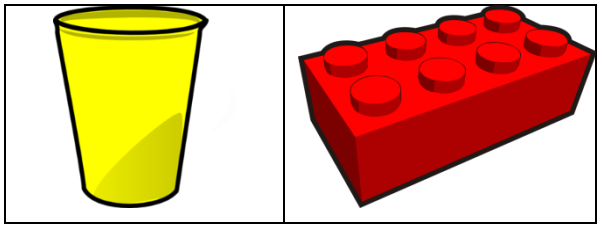
- https://twinkl.co.uk – has a range of resources to support the teaching of shape across KS1 and KS2
- https://www.teachingideas.co.uk/subjects/geometry
- https://mathsnoproblem.com/blog/teaching-tips/maths-misconceptions-squares-and-rectangles/
- https://www.learning4kids.net/category/shapes/
- https://www.bbc.co.uk/teach/skillswise/shapes/z74twty
- https://www.bbc.co.uk/bitesize/topics/zwyv4wx
- https://www.bbc.co.uk/bitesize/topics/zjv39j6
- http://www.primaryresources.co.uk/maths/maths.htm#measures
- https://aplusteacherclub.com.au/shapes-activities/

Geometry Resources

Complete the pattern

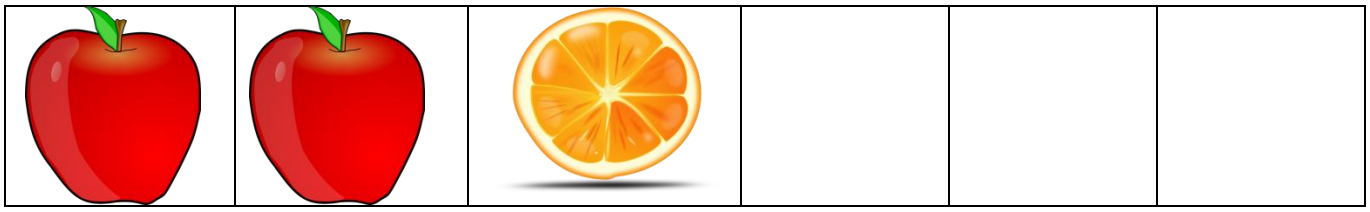


Cards needed for pattern

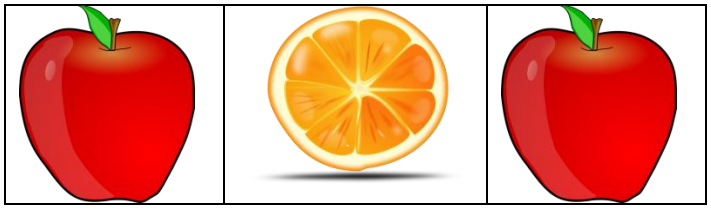


Sequencing Exercise

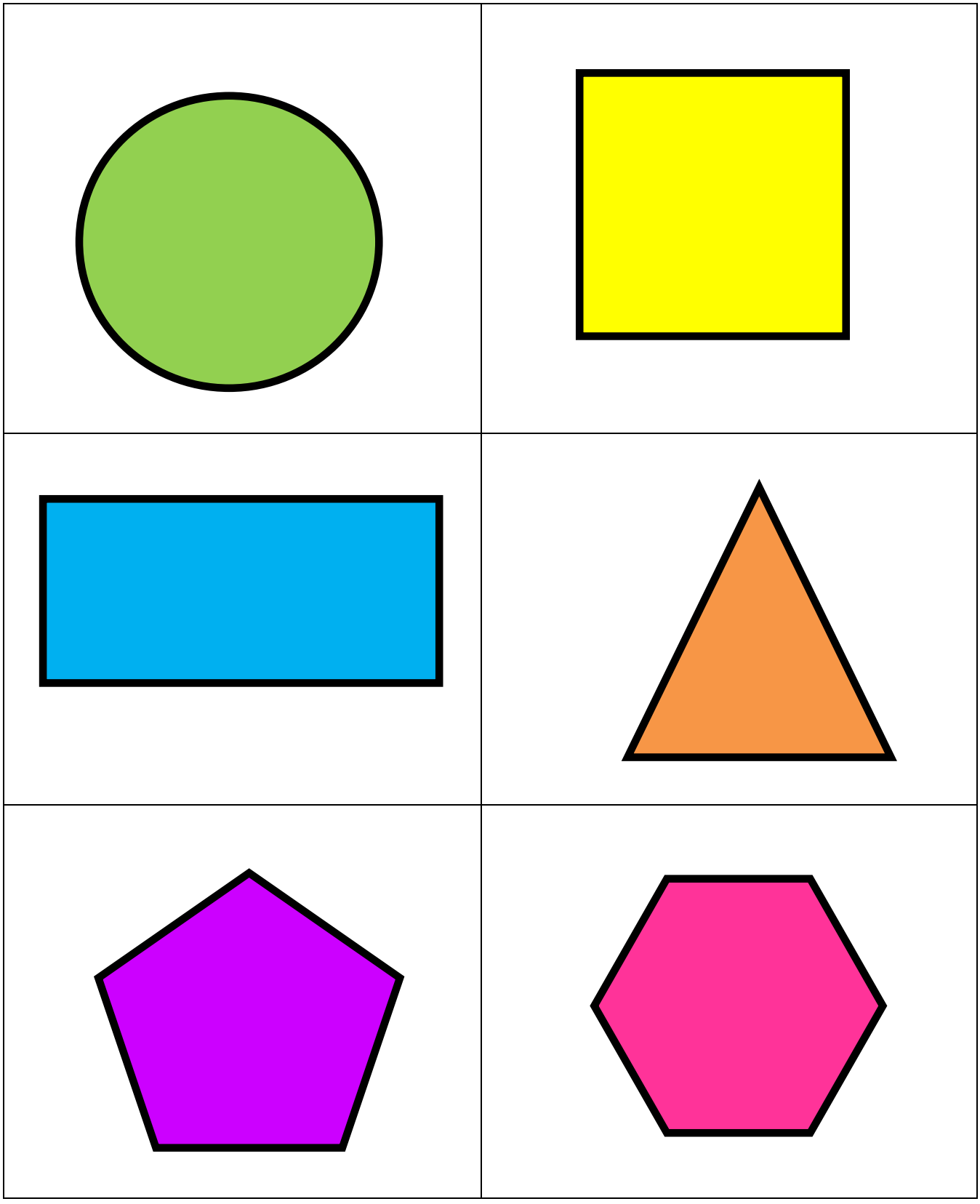
Complete the pattern



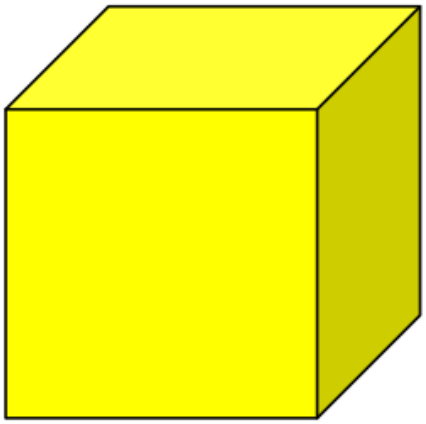
Cards Needed:

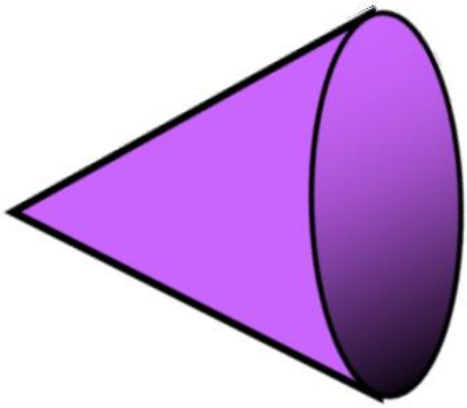


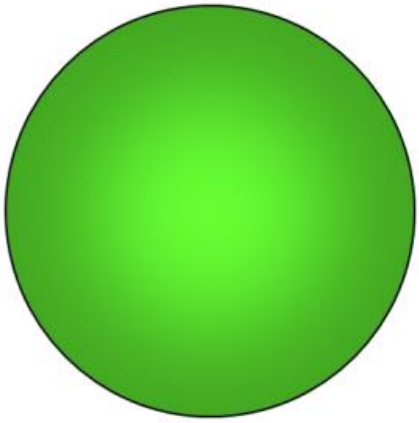
2D shapes

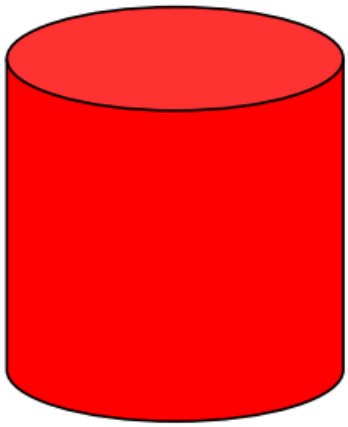


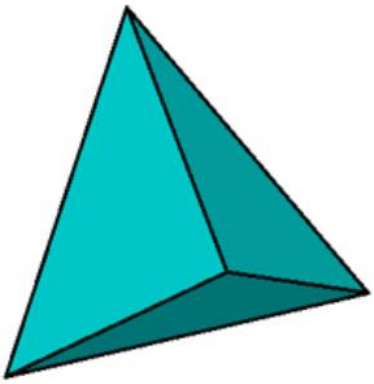
3D Shapes





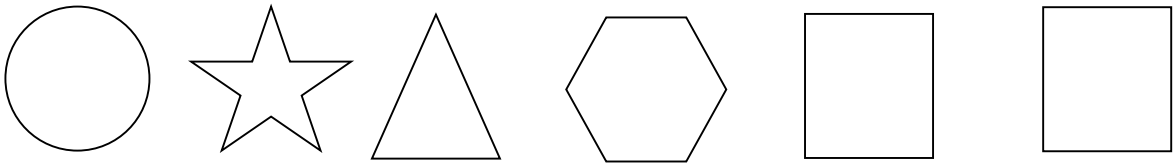


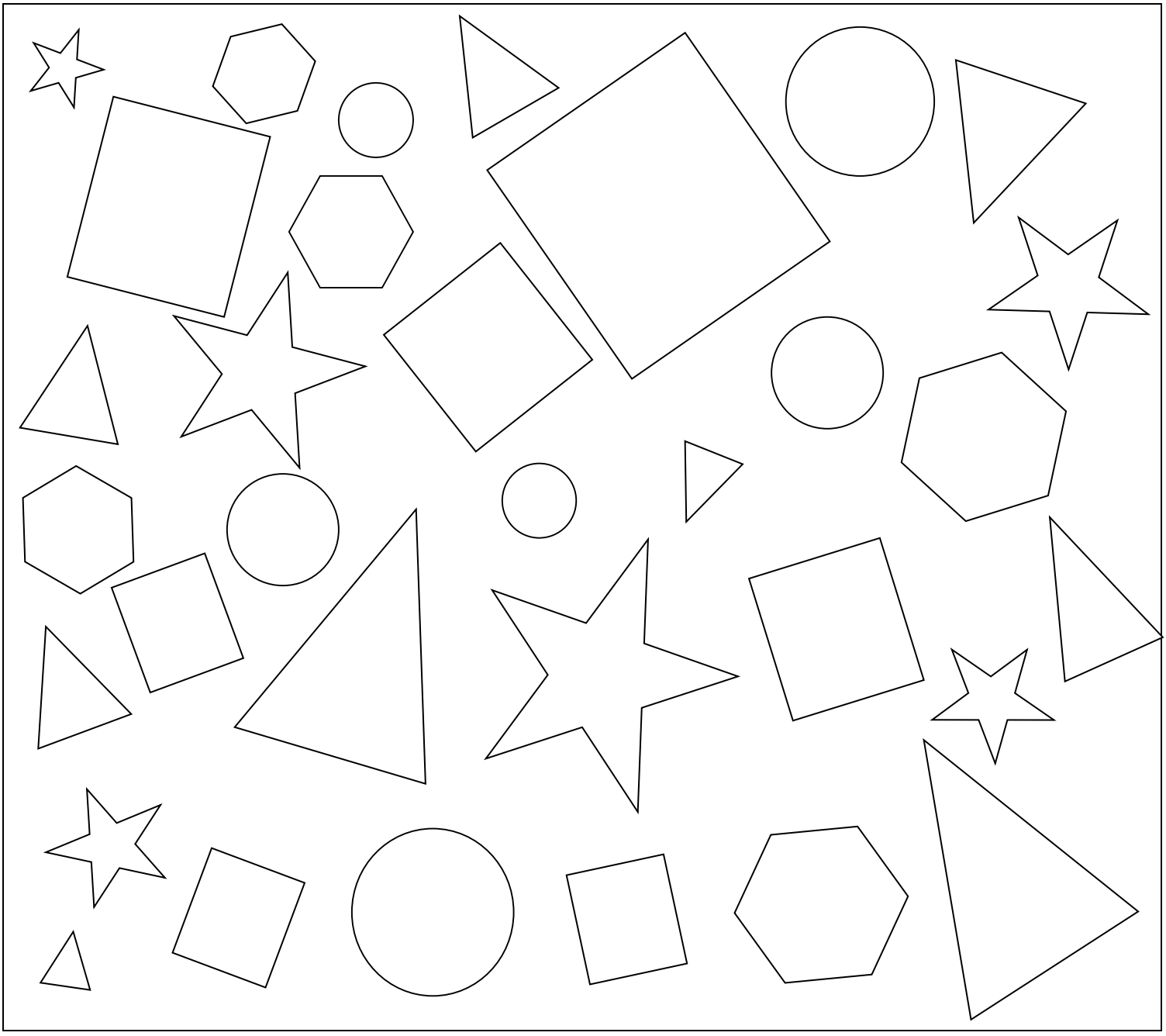




Shape Challenge

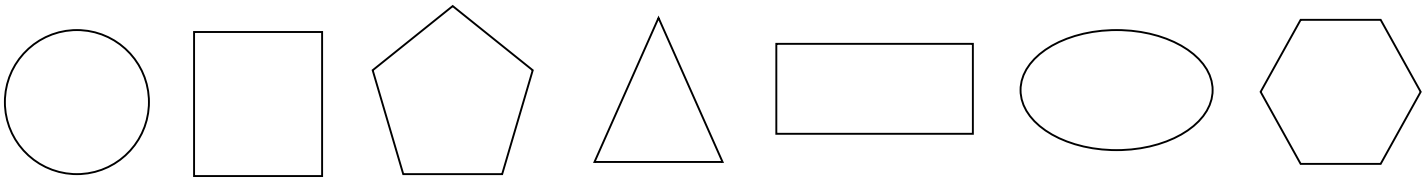
Find these shapes. Colour each shape a different colour.

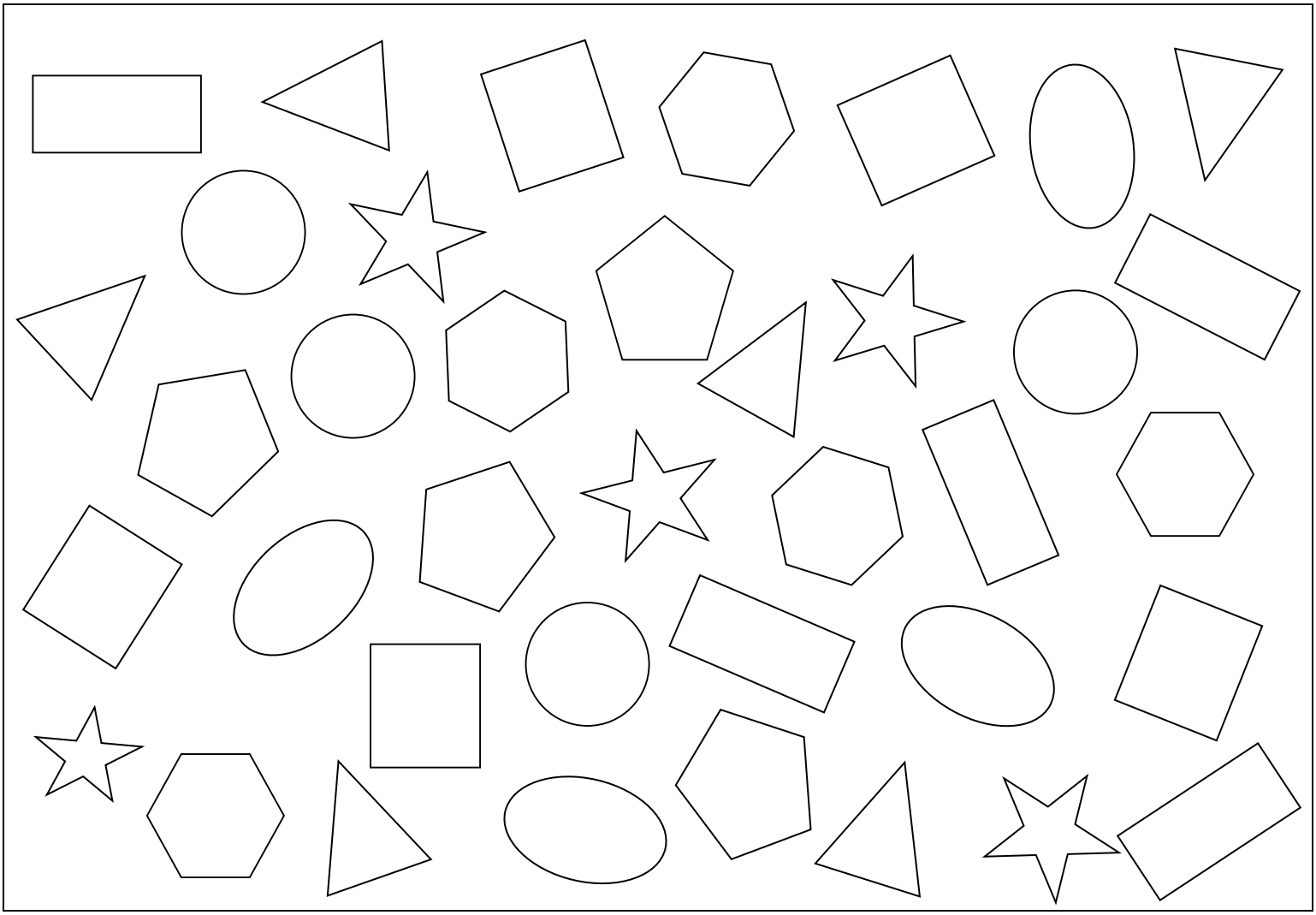


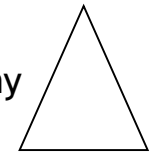
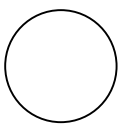


Shape Challenge

Find these shapes. Colour each shape a different colour.

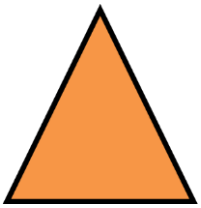
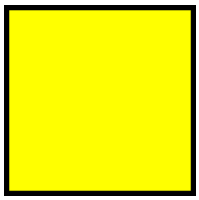
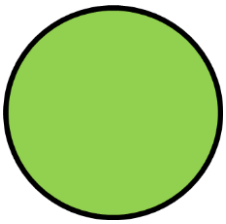
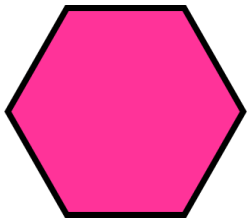
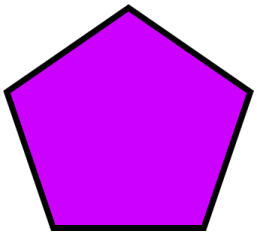




How many  ? How many  ? How many  ?

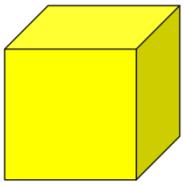
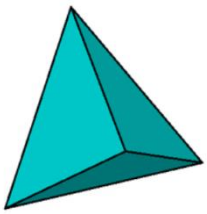
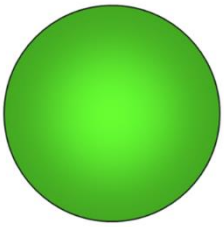
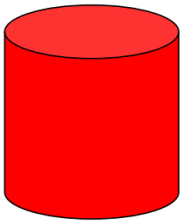
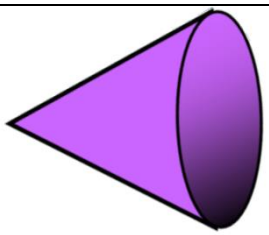
2D Shape Hunt

Go on a shape hunt and see which 2D shapes you can find!

Triangle 	Objects found:
Square 	Objects found:
Circle 	Objects found:
Hexagon 	Objects found:
Pentagon 	Objects found:
Rectangle 	Objects found:

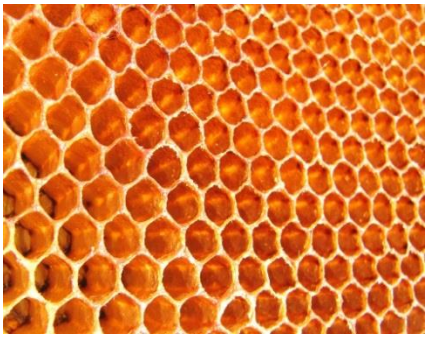
3D Shape Hunt

Go on a shape hunt and see which 3D shapes you can find!

Cube 	Objects found:
Pyramid 	Objects found:
Cuboid 	Objects found:
Sphere 	Objects found:
Cylinder 	Objects found:
Cone 	Objects found:

2D Real Life Shapes

Which shapes can you see in the pictures below?

3D Real Life Shapes

Which shapes can you see in the pictures below?

3D Shapes – Do they roll or slide?

Put a 3D shape on the ramp and see if it rolls or slides. Make a prediction before you start.

Shape	Prediction – will it roll or slide?	Did it roll or slide?
Cube		
Sphere		
Cuboid		
Cylinder		
Cone		
Pyramid		

Which shapes didn't roll?

Why do you think they didn't roll?

Measures – Capacity, Length and Weight

General Strategies

- Support knowledge and understanding through practical experiences, using a range of different equipment including standard and non-standard units of measurement.
- Encourage collaborative learning as much as possible – encourage exploration and discussion. Opportunities to discuss their thinking and share reasoning of choices will help to support understanding.
- Relate to real life where possible – most of the pupils' experiences of measure will be outside of the classroom, so you need to make the links for them and emphasise where/how these skills will be useful.
- Make connections to other areas of maths including, number, decimals, fractions, percentages, ratio, shape and data handling.
- Introduce the concept of measuring through the use of non-standard units, then move to standard units.

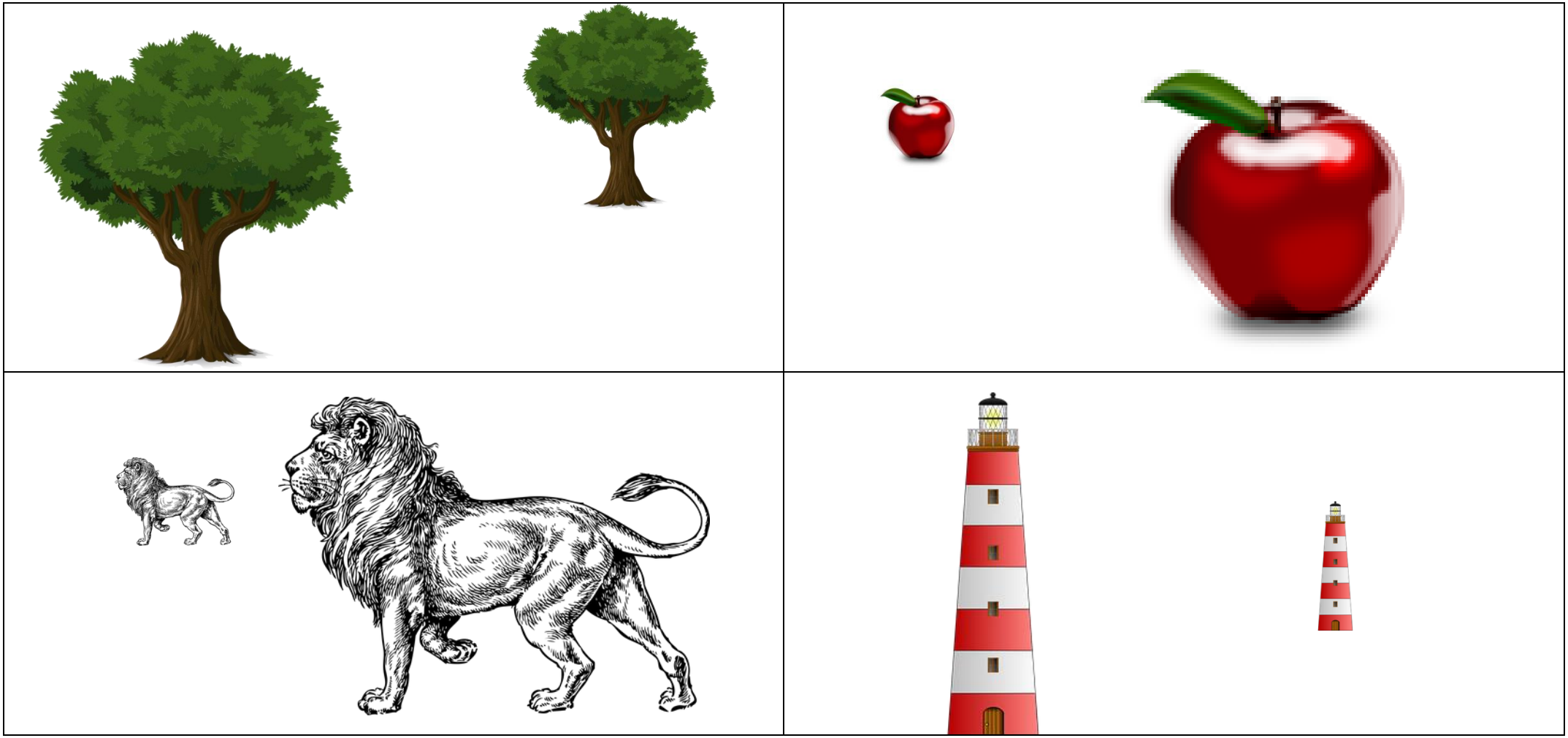
10 Minute Activities

- PKSS1 Think of a ….. game – Encourage the pupil to consider known objects in terms of measurement, i.e. animals that are tall/short, big/small, heavy/light
- PKSS1 Sorting game – Provide the pupil with a selection of objects. Ask them to sort in different classifications, i.e. heavy/light, long/short
- PKSS1 PKSS4 Measuring challenge – can the pupil find the …… heaviest/longest object in the classroom?
- PKSS1 PKSS4 Measuring challenge – can the pupil find things that are longer/shorter than……, weigh more/less than….., hold more/less than….?
- PKSS1 PKSS4 PKSS6 Water tray play – fill the water tray with coloured water and different sized containers. Encourage use of related language, e.g. full, empty, half-full etc.
- PKSS5 PKSS6 Loop cards – converting cm/m, ml/cl etc.
- PKSS5 PKSS6 What can we use to measure? Can the pupil think of an appropriate unit to measure a chosen known object? Standard and non-standard.
- PKSS5 PKSS6 Measurement scavenger hunt - What is the longest and shortest object they can find? https://www.education.com/activity/article/Measurement_Scavenger_Hunt/
- PKSS6 Measure the temperatures of their friends (using head thermometers) can they order them from lowest to highest temperature?

Websites with useful ideas:

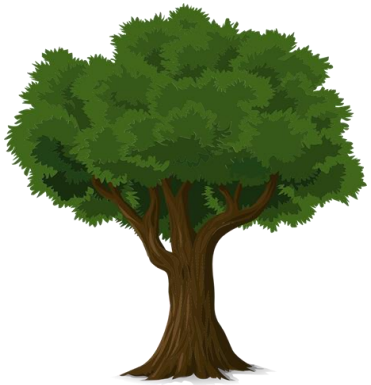
- https://twinkl.co.uk – has a range of resources to support the teaching of measures across KS1 and KS2
- https://www.teachingideas.co.uk/subjects/measure
- https://mathsnoproblem.com/blog/teaching-tips/tips-for-teaching-measure-in-ks1/
- https://www.learning4kids.net/tag/measurement-activities/
- https://www.bbc.co.uk/teach/skillswise/measuring/zkvqcqt
- https://www.bbc.co.uk/bitesize/topics/zt9k7ty/resources/1
- https://www.bbc.co.uk/bitesize/topics/zrwkgwx
- https://www.bbc.co.uk/teach/skillswise/temperature/zh4ghbk

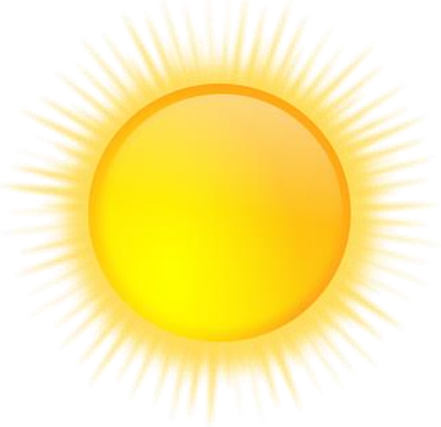
Big and Small - Comparison sheet



Hot or cold?

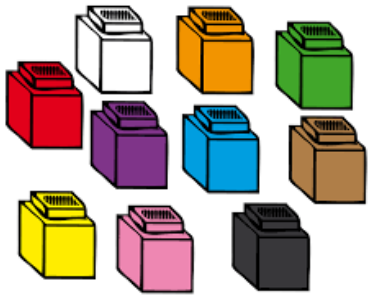
Can you put a red circle around the things that are hot and a blue circle around the things that are cold?
Can you think of any other things that are hot or cold?

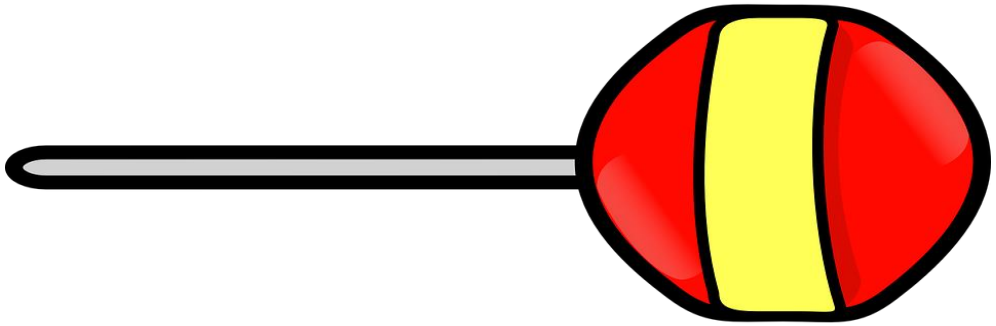




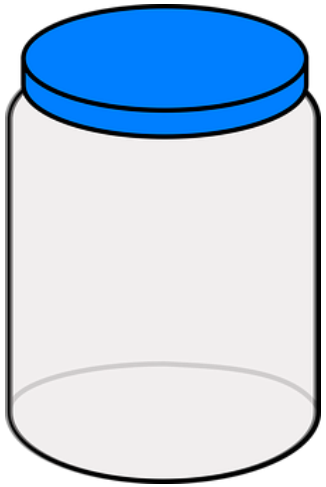
Measuring with cubes

Can you use cubes to measure the length of the pictures below?
Record your answers – which was longest?
Now use the cubes to measure other things in the classroom.
What was the shortest thing and the longest thing that you found?





Capacity



Questions:

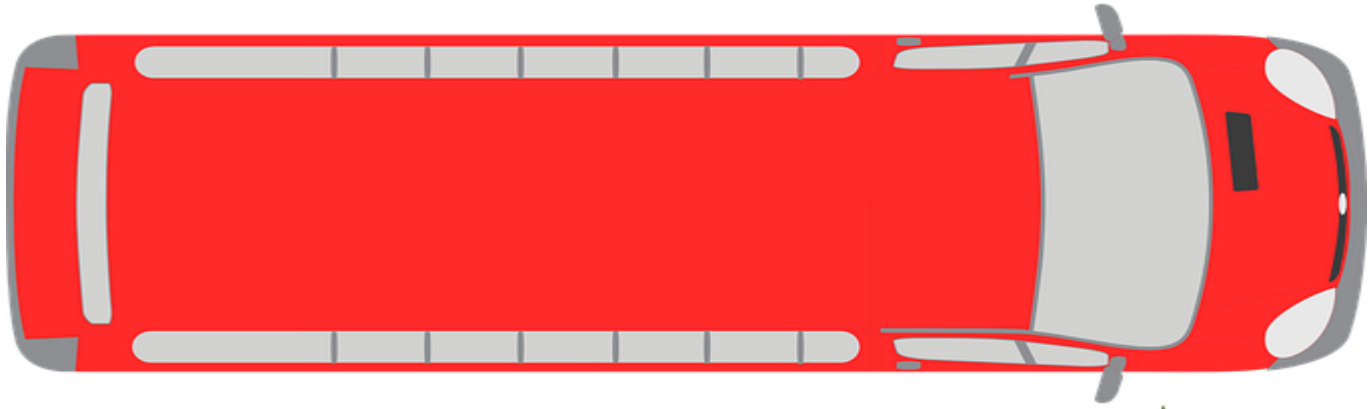
Tell me about each of the containers - how much liquid do they have in?

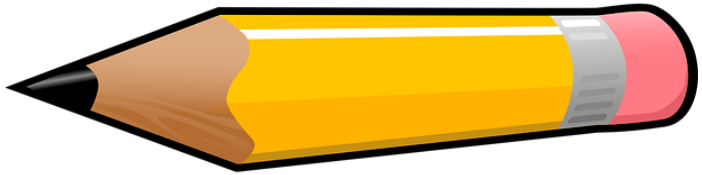
Can you compare two of the containers using the words more/less?

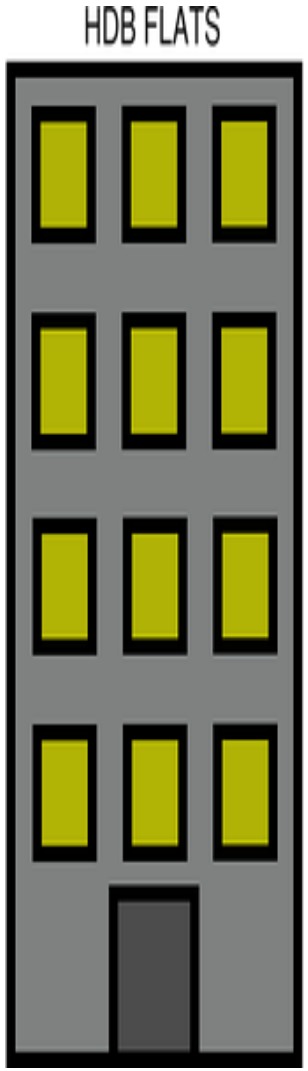
Different scales of measurement?

Using a ruler

Can you use a ruler to find out the length of these pictures?







Thermometers