

At home materials
Learner Pack
Year 3 Weeks 1-4

Pack 1: Numbers

Session A) Counting and grouping

Session B) Value of the place

Session C) Regrouping

Session D) Build and adjust

Pack 2: Multiplication and division

Session A) Describing equal groups

Session B) Multiplication situations

Session C) Arrays and area

Session D) Times greater

Pack 5: Addition key facts

Session A) Addition and subtraction

Session B) Using key facts within ten

Session C) Using key facts within twenty

Session D) Modelling problems

Pack 6: Addition and subtraction methods

Session A) Addition strategies

Session B) Addition written method

Session C) Subtraction strategies

Session D) Subtraction written method



Timing

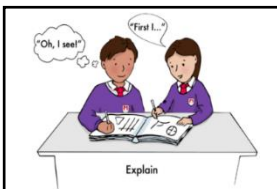
Each session is 30 minutes
20 minute Talk Task and 10 minute independent activity

Session guidance

Get talking and grow your language.

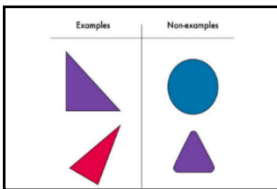
Use equipment, manipulatives, models and images to show and explain.

Challenge **yourself** to think mathematically. Use the Prompts for Thinking listed below to help build up habits in the way you think about mathematical situations.



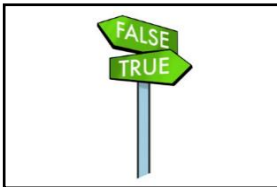
Reason it

Explain how you know. Focus on reasons rather than answers. What could you say, do, draw or write to help someone else understand?



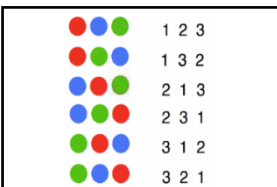
Generate examples and non-examples

What are the important features? What features are not important (e.g. colour)?



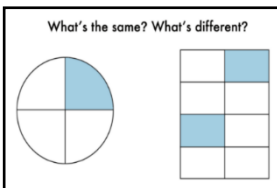
True or false?

If true, give examples to support your answer. If false, give a counter example.



Find all possibilities

Have you found all the possible answers? How do you know? Did you work systematically?



What's the same? What's different?

Compare and contrast and look for connections. How many different answers can you give?



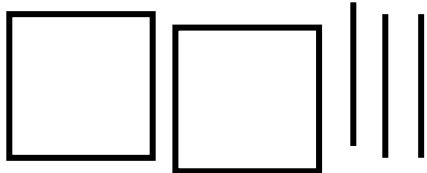
Always, sometimes or never true?

Give examples to show if the statement is always, sometimes or never true. How do you know?

Pack 1 Session A

Activity: Counting and grouping

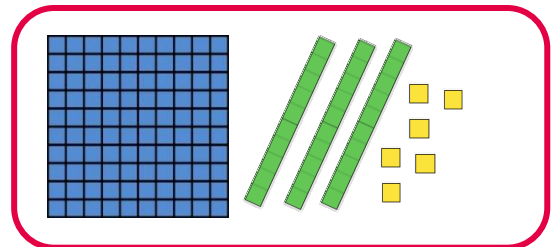
1) Complete the table to show each number with Dienes and in words.

number	Dienes	words
		One hundred and fifty four
		_____
307		_____

2) If you count in steps of 10 starting at 56, will you say these numbers?
Tick the ones you will say. What other numbers would you say?

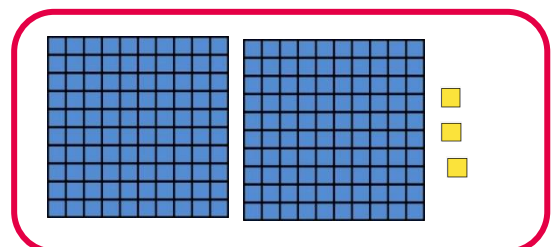
65

Ninety six



106

One hundred
and ten



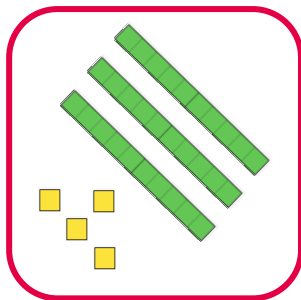
160

Two hundred
and twenty six

Pack 1 Session B

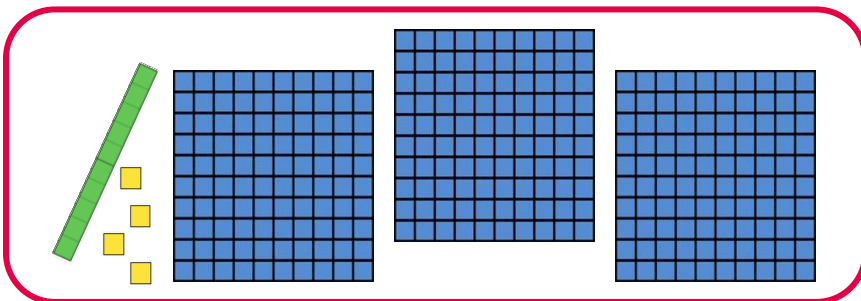
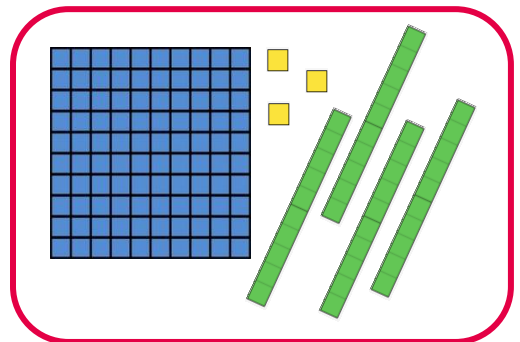
Talk Task: The value of the place

How many different 2-digit and 3-digit numbers can you build and write with these digits?



Fourteen

Four hundred and thirteen



How do you know you have found them all?

● ● ●	1 2 3
● ● ●	1 3 2
● ● ●	2 1 3
● ● ●	2 3 1
● ● ●	3 1 2
● ● ●	3 2 1

Pack 1 Session B

Activity: The value of the place

1) Use these digits to create numbers for each of the properties



a) A number less than 100

b) A number greater than 300

c) An even number

d) A number that you can show with 7 Dienes blocks

e) An odd number

2) Generate at least two examples and non-examples for each

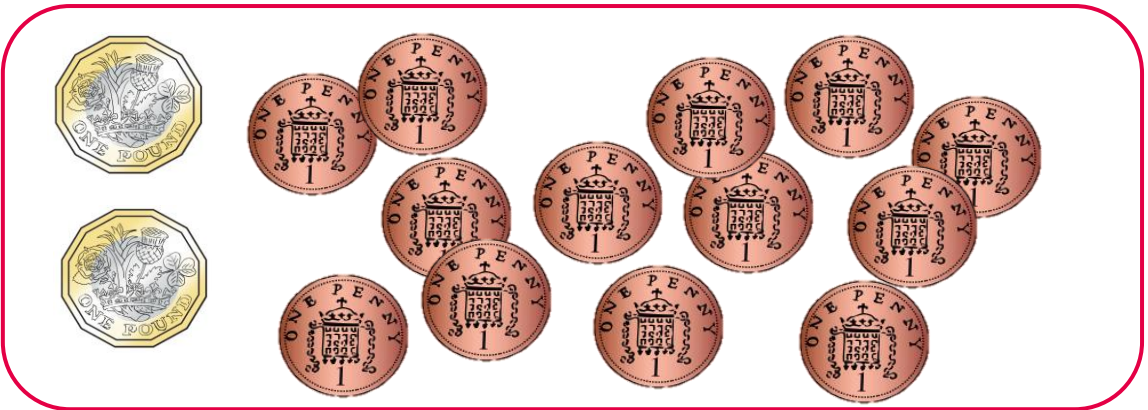
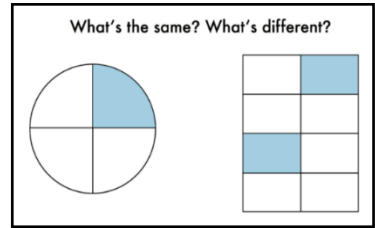
	Examples	Non-examples
A number with 4 tens that is greater than 500		
An even number with 3 hundreds		
A number with 6 ones that is greater than 100 but less than 200		

Pack 1 Session C

Talk Task: Counting coins

What is the same? What is different?

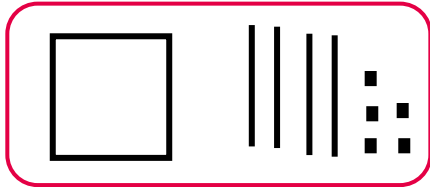
Use Dienes to explain and show why



Pack 1 Session C

Activity: Regrouping

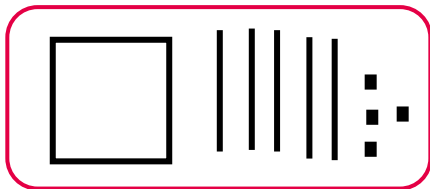
1) Match the representations



$$90 + 14$$

5 tens and
95 ones

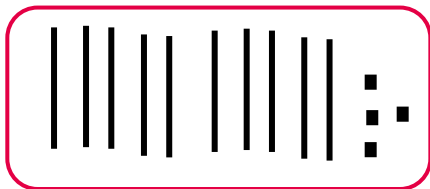
$$154$$



$$90 + 55$$

1 hundred,
2 tens and
34 ones

$$145$$



$$100 + 40 + 14$$

4 tens and
64 ones

$$104$$

2) Fill in the blanks to show each number in different ways. How many more can you think of?

$$42$$

- $40 + \square$
- $\square + 12$
- $20 + \square$
- $\square + 21$

$$84$$

- $\square + 4$
- $60 + \square$
- $\square + 34$
- $51 + \square$

$$168$$

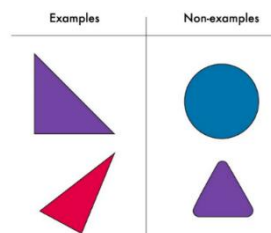
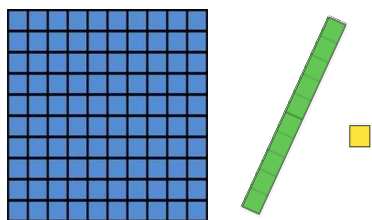
- $\square + 60 + 8$
- $100 + 50 + \square$
- $100 + \square + 28$
- $\square + 70 + 8$
- $90 + 60 + \square$
- $90 + \square + 28$

Pack 1 Session D

Talk Task: Build and adjust

Exactly ten blocks

What numbers can and cannot be shown?



Adjust your model

Add one block.

What could happen? What could not happen?

Take away one block.

What could happen? What could not happen?

Choose a number. Add 10

The digit in the ones place changes.

The digit in the tens place changes.

The digit in the hundreds place changes.

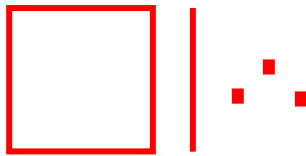
Explore if the statements are always, sometimes or never true.



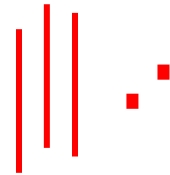
Pack 1 Session D

Activity: Build and adjust

1) Draw and write numbers with **exactly five Dienes blocks**



113



32

2) Circle always, sometimes or never and give examples to support your answer.

always

sometimes

never

If you add 1 to a number, the digit in the ones place changes.

always

sometimes

never

If you add 1 to a number, the digit in the tens place changes.

always

sometimes

never

If you add 1 to a number, the digit in the hundreds place changes.

Pack 4 Session A

Talk Task: Derived facts – adjusting a factor by 1



There are 8 apples in each bag.

$$8 \times 7 = 56$$

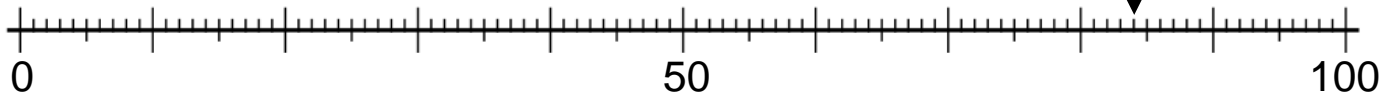
Take away a bag

Add a bag

Take one apple
out of every bag

Add one apple
to every bag

$$14 \times 6$$
$$84$$



14×5

14×7

13×6

15×6

14×5 is ___ less than 14×6

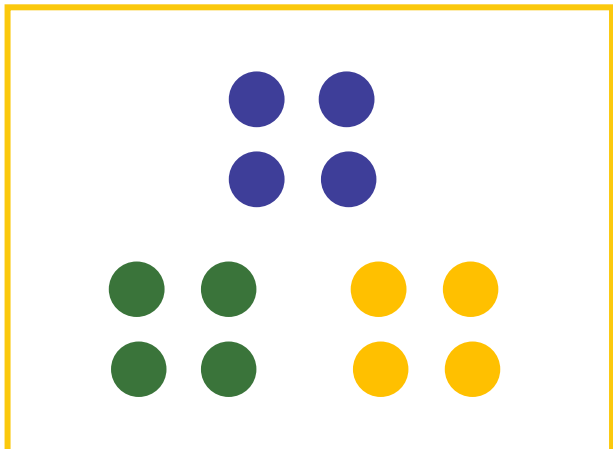
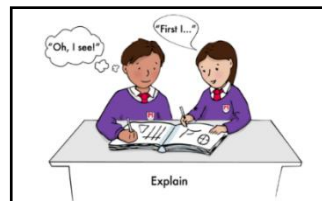
13×6 is ___ less than 14×6

14×7 is ___ more than 14×6

15×6 is ___ more than 14×6

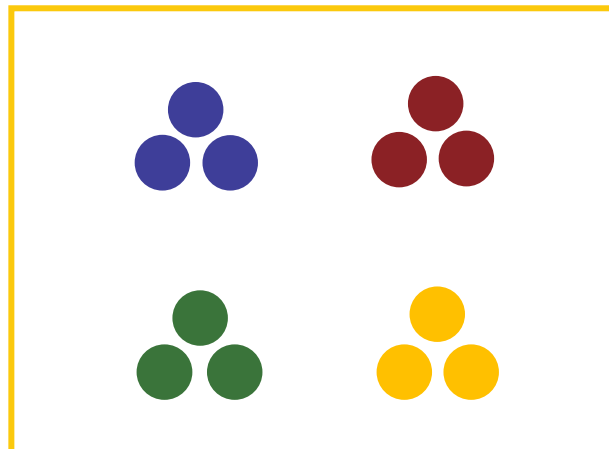
Pack 2 Session A

Talk Task: Describing equal groups



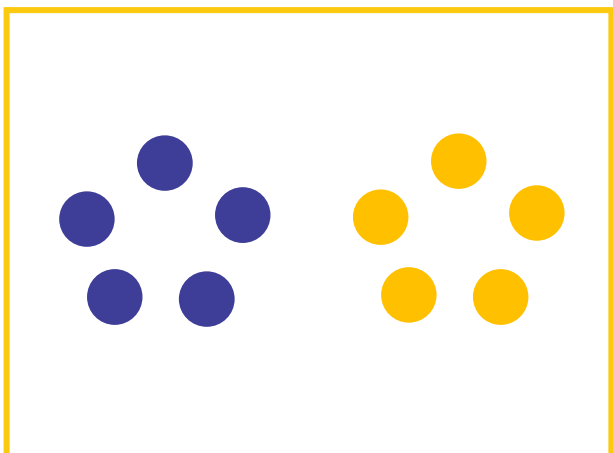
$$3 \times 4 = 12$$

$$4 \times 3 = 12$$



$$12 \div 3 = 4$$

$$12 \div 4 = 3$$



$$2 \times 5 = 10$$

$$5 \times 2 = 10$$



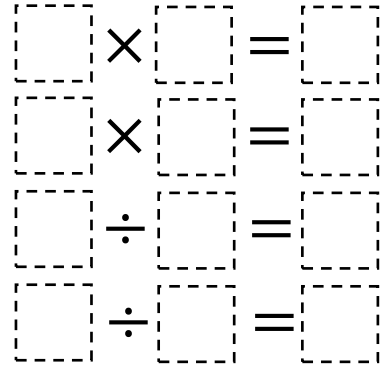
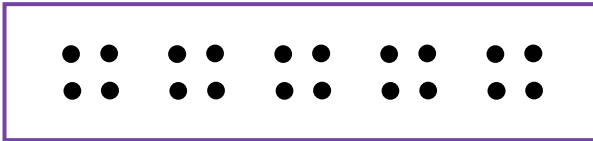
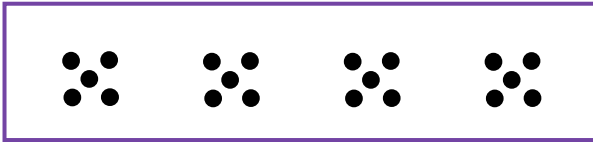
$$10 \div 2 = 5$$

$$10 \div 5 = 2$$

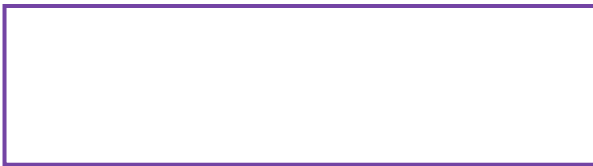
Pack 2 Session A

Activity: Describing equal groups

1) Write four calculations to describe the counters



2) Draw two different sets of counters to show the calculations



$$3 \times 7 = 21$$

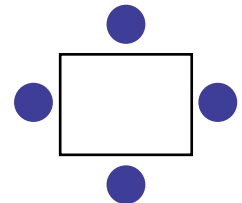
$$7 \times 3 = 21$$

$$21 \div 7 = 3$$

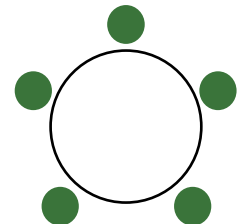
$$21 \div 3 = 7$$

3) Table arrangements

- a) Between 30 and 40 people are sat at tables of 4.
All the tables are full.
How many tables could there be?



- b) Between 40 and 60 people are sat at tables of 5.
All the tables are full.
How many tables could there be?

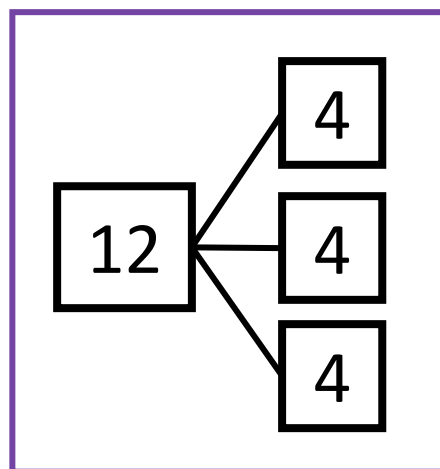
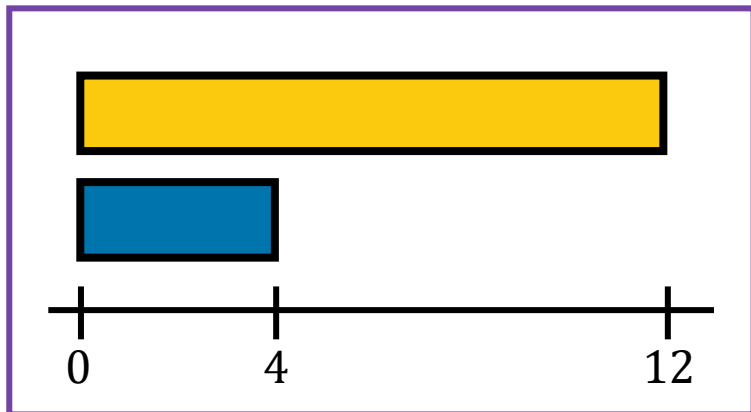
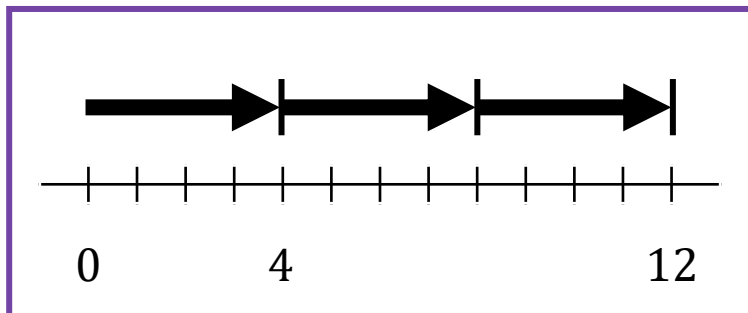
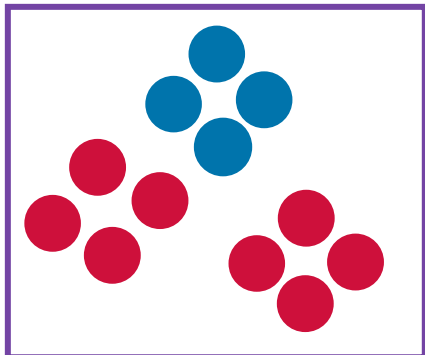
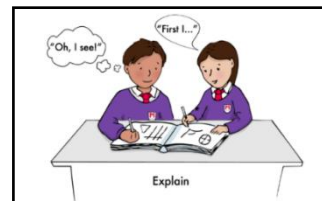


- c) I need to seat 46 people. What are my options
with the tables shown above?

Pack 2 Session B

Talk Task: Multiplication situations

Explain which model can represent each problem (there is more than one answer!)



I have three lengths of rope. Each one is 4 metres long. How much rope do I have?

I have £4 and my brother has three times as much. How much money does my brother have?

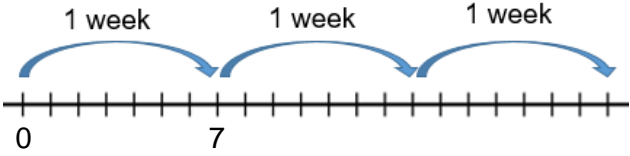
I have 12 kg of sugar and divide it into 3 equal bags. How much sugar is in each bag?


I exercise for 12 minutes and spend 4 minutes on each activity. How many activities do I complete?

Pack 2 Session B

Activity: Multiplication situations

Complete the images, models and calculations and answer the question.

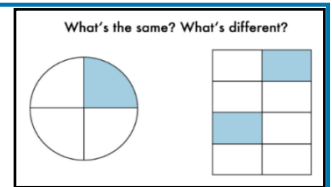
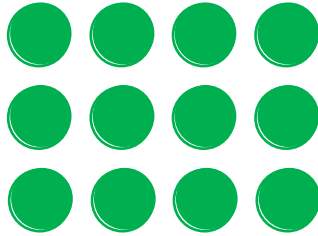
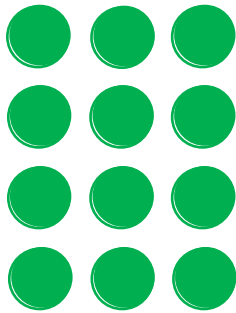
<p>Problem: How many _____ are there in ___ weeks? How many weeks is ___ days?</p>	<p>Model:</p> 
<p>Calculations: $3 \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times 3 = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$</p>	<p>Answer: There are ___ days in 3 weeks. 21 days is ___ weeks.</p>

<p>Problem: The total mass is 24 kilograms. Each weight is 4 kilograms in mass. How many weights are there?</p>	<p>Model:</p> 
<p>Calculations: $24 \div 4 = \underline{\quad}$ $4 \times \underline{\quad} = 24$</p>	<p>Answer:</p>

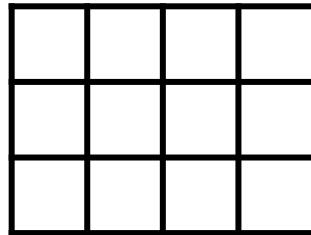
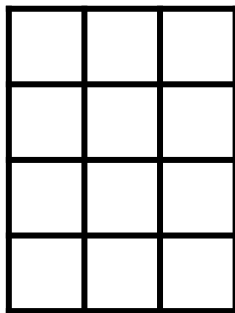
<p>Problem: 18 litres is poured into 3 buckets so that there are equal amounts in each. How much liquid is in each bucket?</p>	<p>Model:</p>
<p>Calculations:</p>	<p>Answer:</p>

Pack 2 Session C

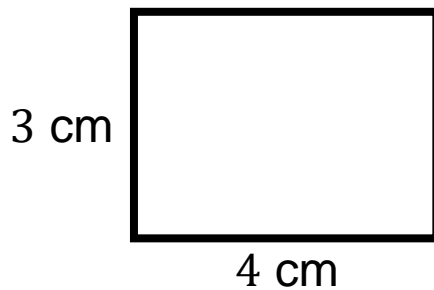
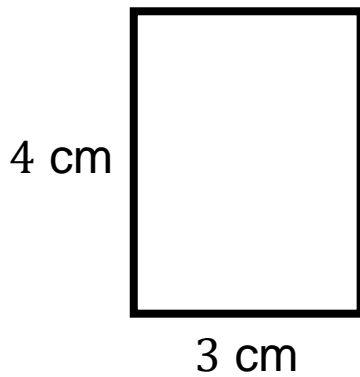
Talk Task: Arrays and area of rectangles



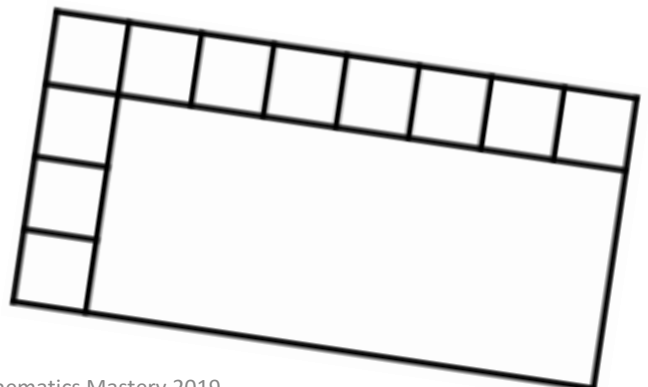
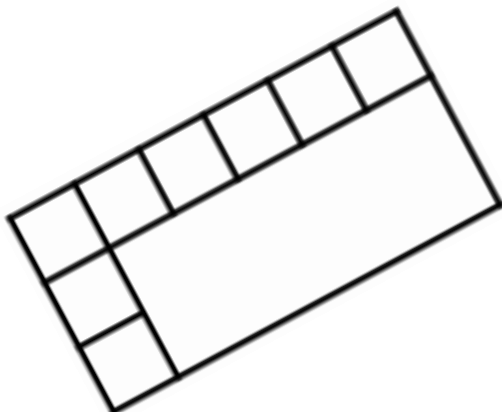
counters



squares



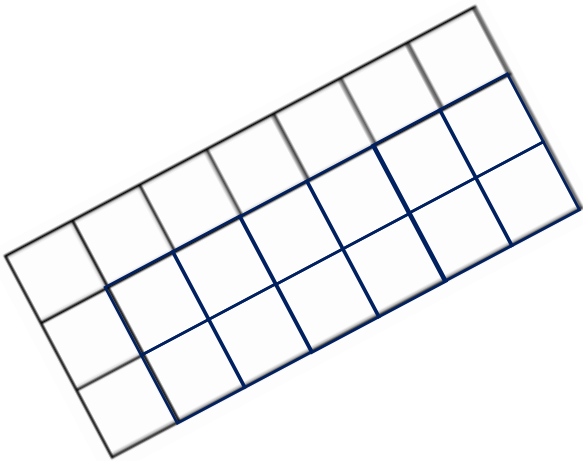
cm²
squared
centimetres



Pack 2 Session C

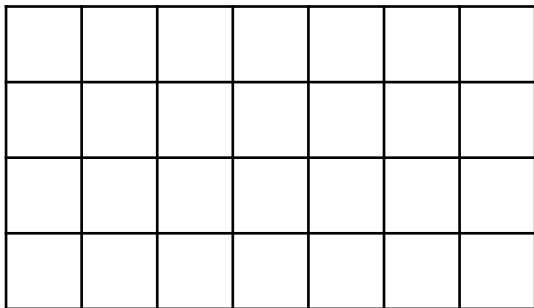
Activity: Multiplication and area of rectangles

How many squares does each rectangle cover? Write calculations that each rectangle can represent.



$$\square \times \square = \square$$
$$\square \times \square = \square$$
$$\square \div \square = \square$$
$$\square \div \square = \square$$

7 cm

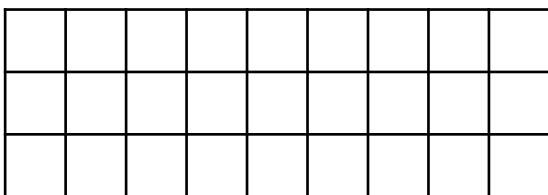


4 cm

$$\square \times \square = \square$$
$$\square \times \square = \square$$
$$\square \div \square = \square$$
$$\square \div \square = \square$$

9 cm

3 cm



$$\square \times \square = \square$$
$$\square \times \square = \square$$
$$\square \div \square = \square$$
$$\square \div \square = \square$$

Pack 2 Session D

Talk Task: Using multiplication to compare



I have 3 times more than you.

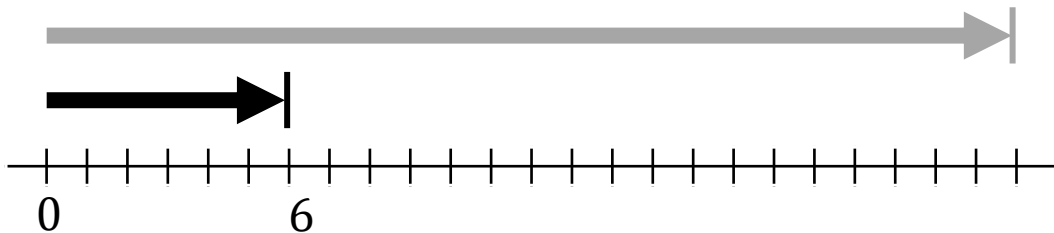
You have triple the amount I have.

I can buy something that is 3 times as expensive.

I have a third of the amount you have.

I would need to triple my money to have the same as you.

You have 3 times less than me.



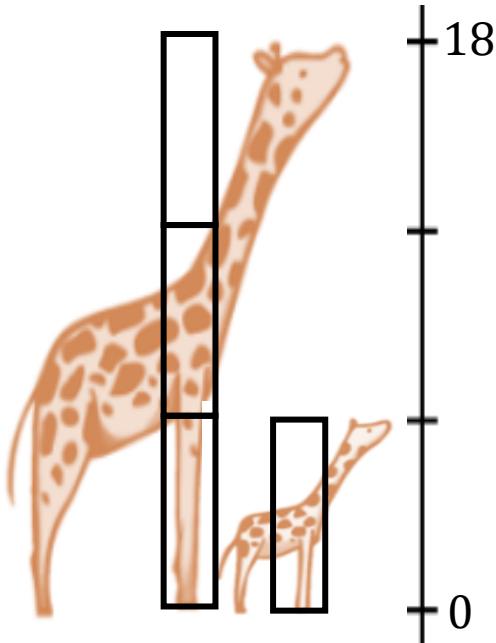
Pack 2 Session D

Activity: Using multiplication to compare

1) Use multiplication to compare the amount each person has. What different sentences could each person say?

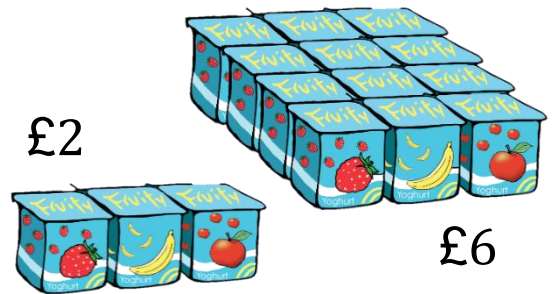


2) An adult giraffe is 18 feet tall.
It is 3 times taller than its calf.



How tall is the young giraffe?
Label the model and write a sentence

3) A pack of 3 yoghurts cost £2.
A pack of 12 yoghurts costs £6.



Use multiplication to describe this situation in as many ways as you can.

Pack 5 Session A

Talk Task: Addition and subtraction

How many addition and subtraction calculations can you show with seven cubes?



$$7 = 7 + 0$$
$$7 - 0 = 7$$

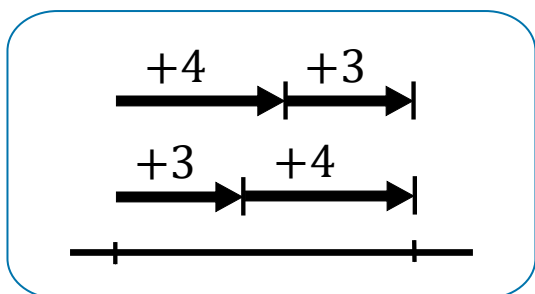
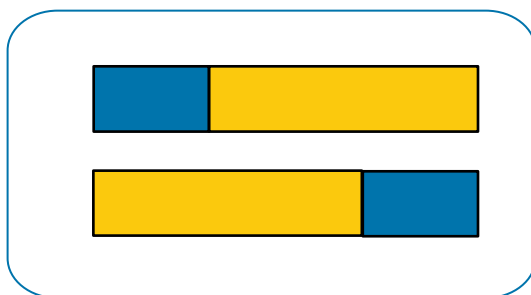
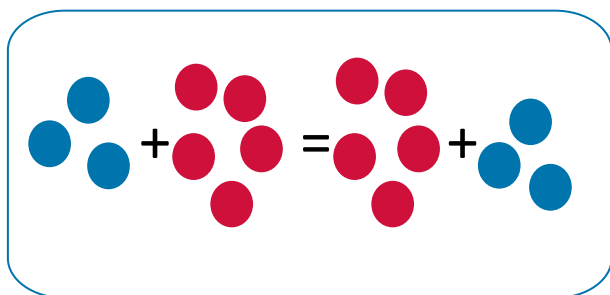


$$7 - 3 = 4$$
$$3 = 7 - 4$$



$$7 = 3 + 2 + 2$$
$$2 + 2 + 3 = 7$$

Explain how each model shows that addition is commutative

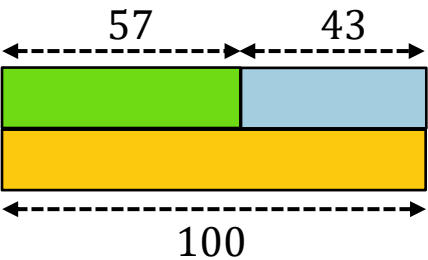


$$a + b = b + a$$

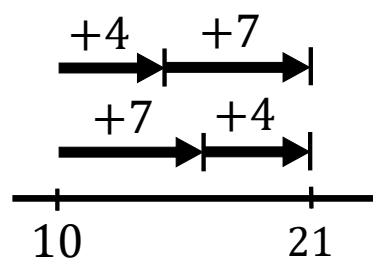
Pack 5 Session A

Activity: Addition and subtraction

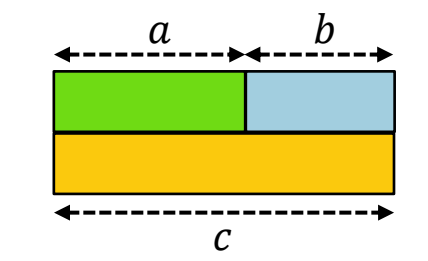
1) Complete the calculations that each model can represent



$57 + \square = 100$ $100 - \square = 43$
 $43 + 57 = \square$ $100 - \square = 57$

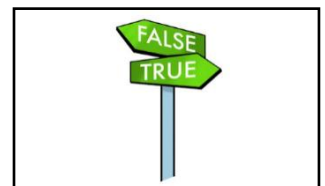


$10 + 4 + 7 = \square$ $21 - 7 - \square = 10$
 $10 + \square + 4 = 21$ $21 - 4 - 7 = \square$



$a + b = c$ $c - a = \square$
 $b + \square = c$ $\square - b = a$

2) Can you move the numbers around to any position?
Circle the calculations that are true.



$3 + 4 = 7$

$4 + 3 = 7$

$7 + 3 = 4$

$3 + 7 = 4$

$4 + 7 = 3$

$7 + 4 = 3$

$3 - 4 = 7$

$4 - 3 = 7$

$7 - 3 = 4$

$3 - 7 = 4$

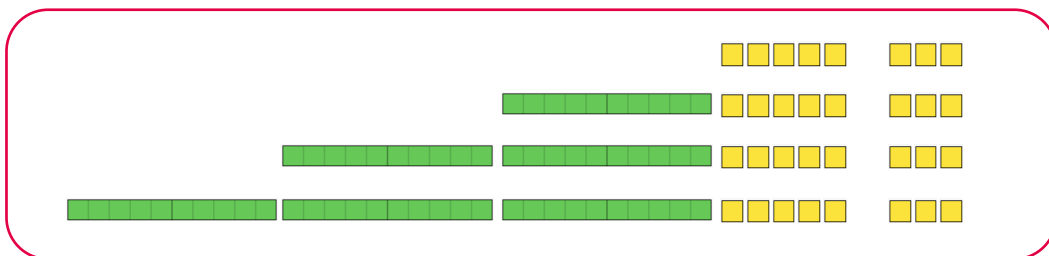
$4 - 7 = 3$

$7 - 4 = 3$

Pack 5 Session B

Talk Task: Key facts to 10

+	0	1	2	3	4	5	6	7	8	9
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7		
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6			
5	5+0	5+1	5+2	5+3	5+4	5+5				
6	6+0	6+1	6+2	6+3	6+4					
7	7+0	7+1	7+2	7+3						
8	8+0	8+1	8+2							
9	9+0	9+1								



8 ones subtract 5 ones is 3 ones

8 tens subtract 5 tens is 3 tens

8 hundreds subtract 5 hundreds is 3 hundreds

Pack 5 Session B

Activity: Key facts to 10

1) Complete the calculation to show how a key fact can be used:

$$4 + 5 = \square$$

$$\square + 4 = 9$$

$$\square + 5 = 19$$

$$\square + 40 = 90$$

$$29 - 5 = \square$$

$$900 - 400 = \square$$

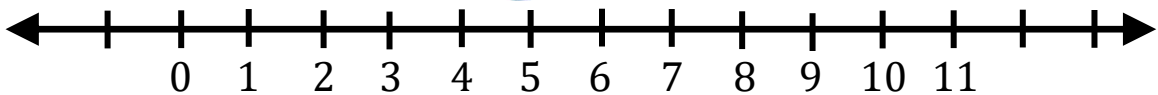
$$\square - 4 = 75$$

$$9000 - \square = 4000$$

2) Write calculations that $6 + 2 = 8$ can be used to work out.



W ← → E



A : Move east 5

B : Move west 3

3) This robot has two different instructions. Use A and B to move the robot from position 5 to each of these numbers. Write a calculation to describe the movement. An example is given:

10 **A**

$$5 + 5 = 10$$

9

7

6

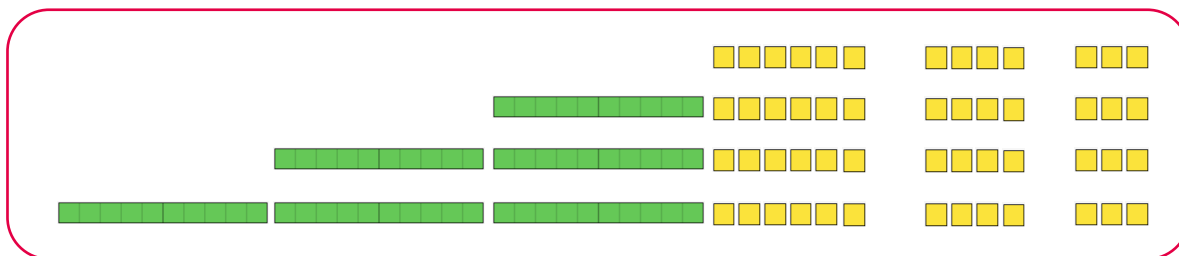
2

1

Pack 5 Session C

Talk Task: Key facts to 20

+	0	1	2	3	4	5	6	7	8	9
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9



13 ones subtract 7 ones is 6 ones

13 tens subtract 7 tens is 6 tens

13 hundreds subtract 7 hundreds is 6 hundreds

Pack 5 Session C

Activity: Key facts to 20

1) Complete the calculation to show how a key fact can be used:

$$4 + 7 = \square$$

$$\square + 7 = 41$$

$$61 - 7 = \square$$

$$\square - 7 = 94$$

$$9 + \square = 14$$

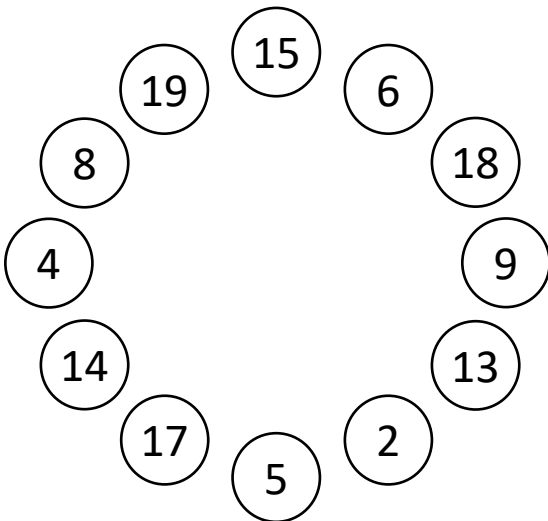
$$\square + 90 = 140$$

$$1400 - 500 = \square$$

$$14000 - \square = 5000$$

2) Write calculations that $8 + 7 = 15$ can be used to work out.

3) Sum four numbers.



Write different calculations you did:

Which is the largest?

Which is the smallest?

Write the odd numbers you can make:

Write the even numbers you can make:

What else can you say about the numbers you can get? Multiple of 3 or 5?

Pack 5 Session D

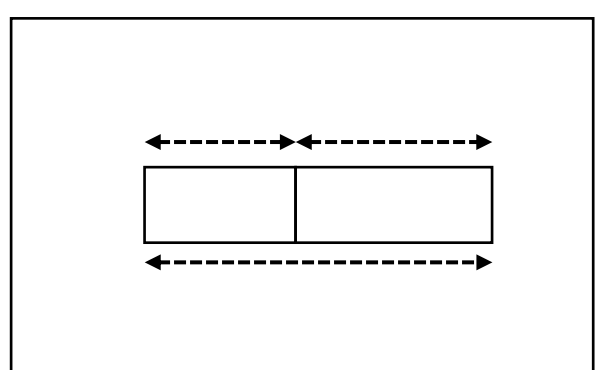
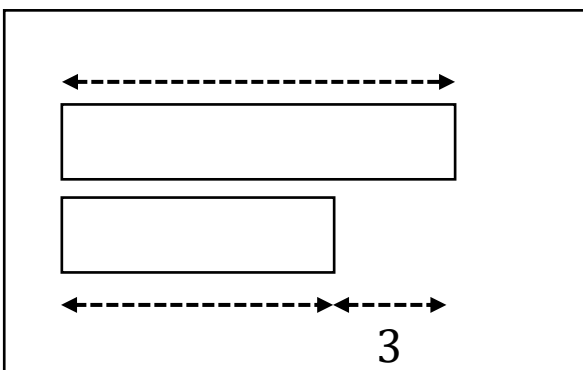
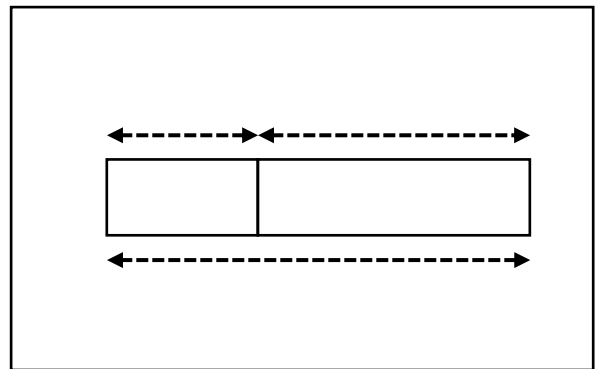
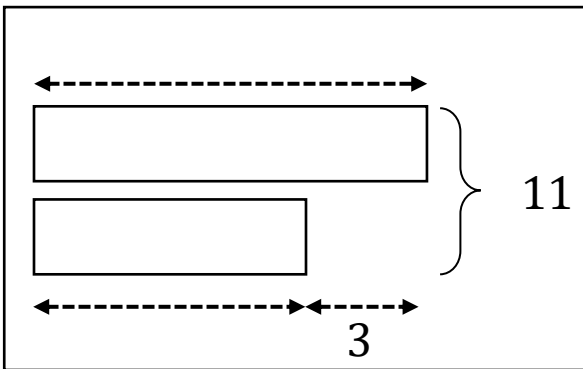
Talk Task: Modelling problems

John has three marbles.
His brother gives him four more.
How many does John have?

John has three marbles more than his brother.
His brother has 11 marbles.
How many does John have?

John has three marbles more than his brother.
Altogether they have 11 marbles.
How many does John have?

John has three marbles
His brother has 8 marbles.
How many do they have altogether?



John has three marbles.
Altogether John and his brother have 11 marbles.
How many does John's brother have?

John has three marbles fewer than his brother. His brother has 11 marbles.
How many do they have altogether?

Pack 5 Session D

Activity: Regrouping

- 1) Draw and label a bar model to represent each problem. Give an answer to each question.

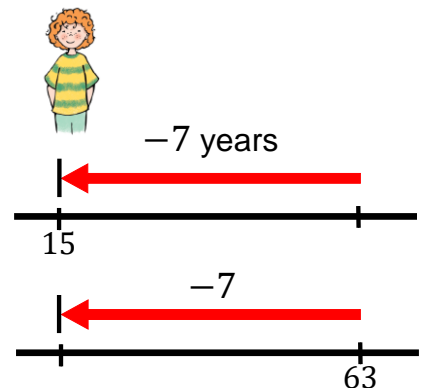
Alicia has £6 more than Bobby. If Bobby had £10, how much do they have altogether?

Alicia has £6 more than Bobby. If Alicia had £10, how much do they have altogether?

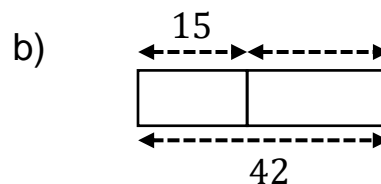
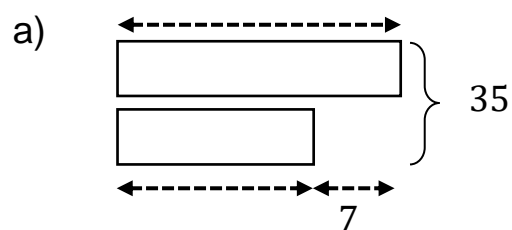
Alicia has £6 more than Bobby. If they had £10 altogether, how much money does each person have?

- 2) Label the models to represent each problem and draw a model for the last question

- a) Chloe is seven years younger than her sister. When she is 15, how old is her sister?
- b) When her sister is 63, how old will she be?
- c) How old will they both be when they have a combined age of 21?

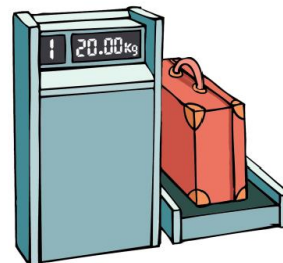


- 3) Write a problem that each bar model could represent



Pack 6 Session A

Talk Task: Addition strategies



Pack all of the items into crates.

No crate can weigh more than 100 kilograms.

What is the fewest number of crates?

65 kg	13 kg	19 kg
53 kg	22 kg	16 kg
48 kg	9 kg	27 kg
39 kg	35 kg	26 kg
18 kg	6 kg	

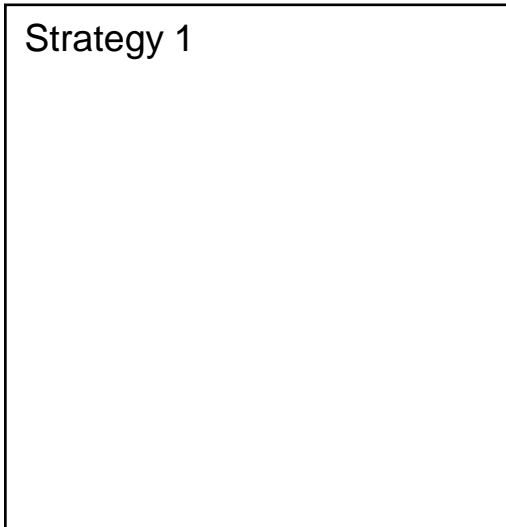
Pack 6 Session A

Activity: Addition strategies

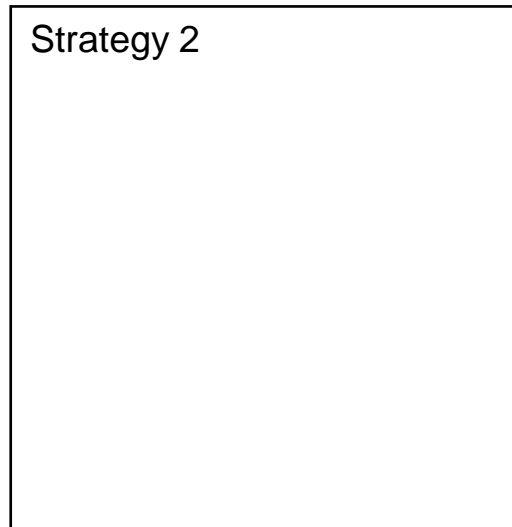
- 1) Add these numbers using two different strategies. Draw a diagram and write calculations to show the steps of what you did.

$$67 + 52 + 43$$

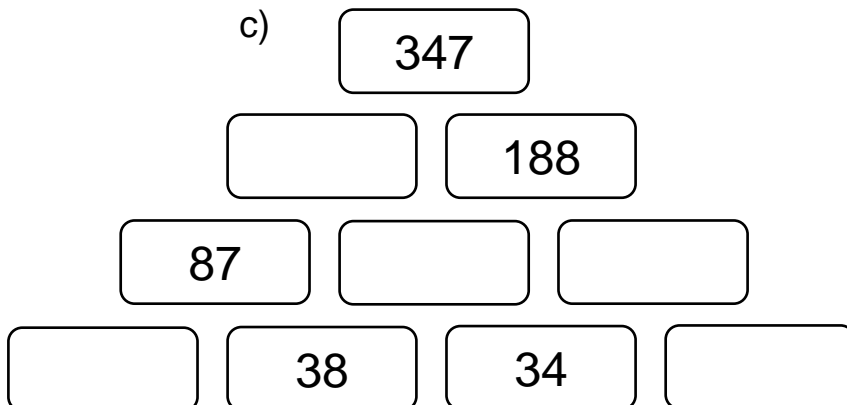
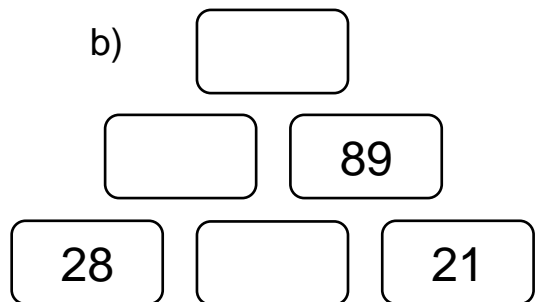
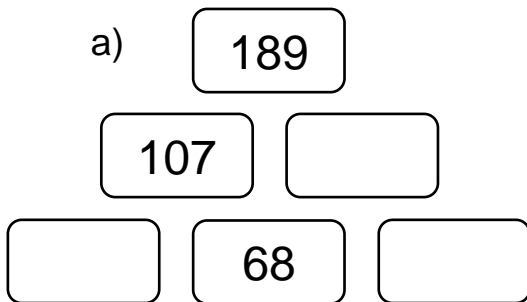
Strategy 1



Strategy 2

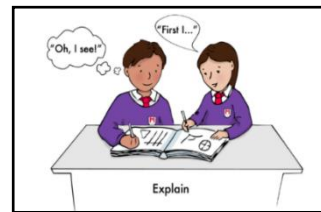


- 2) Complete the three pyramids so that each brick is the sum of the two bricks below.



Pack 6 Session B

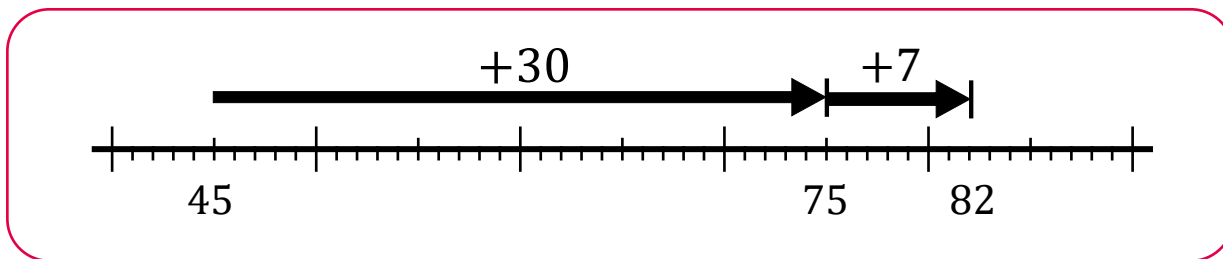
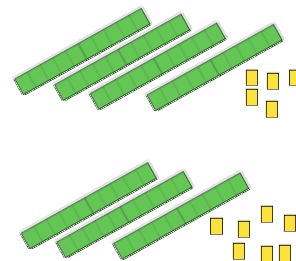
Talk Task: Addition written method



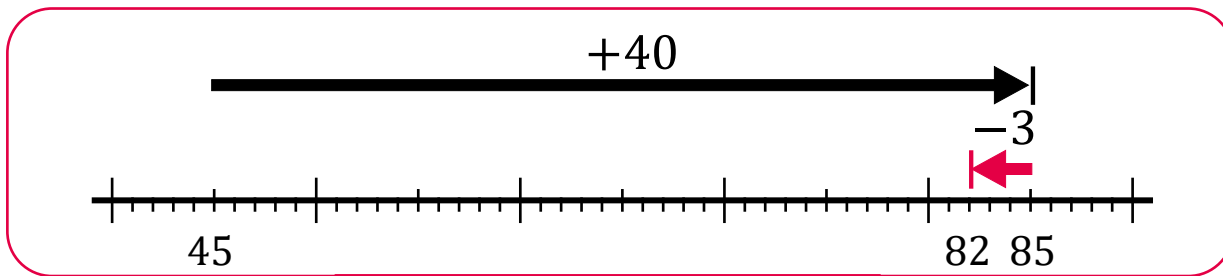
$$\begin{array}{r} 45 \\ + 37 \\ \hline 712 \end{array}$$

$$\begin{array}{r} 45 \\ + 37 \\ \hline 72 \end{array}$$

1



$$45 + 37 = 45 + 30 + 7$$



$$45 + 37 = 45 + 40 - 3$$

45	37
42	40

$$45 + 37 = 42 + 40$$

Pack 6 Session B

Activity: Addition written method

1a) Correct Sara's error:

This doesn't look right



$$\begin{array}{r} 154 \\ + 73 \\ \hline 884 \end{array}$$

Correct calculation:

b) If she makes the same error, what answer would she give for $324+49$

Sara's error:

Correct calculation:

2) Complete each calculation using the space to show how you did it.

a) $398 + 24 =$

b) $390 + 32 =$

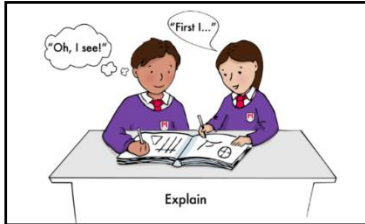
c) $323 + 99 =$

d) $330 + 92 =$

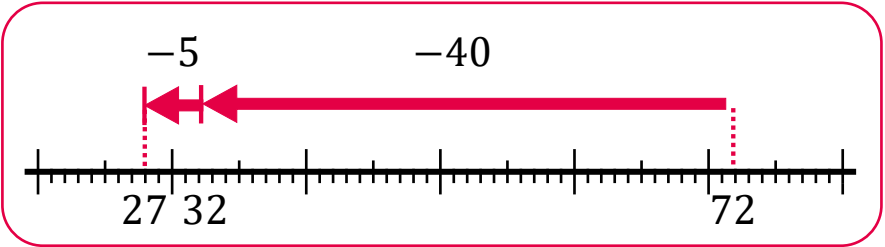
e) What other calculations have the same result?

Pack 6 Session C

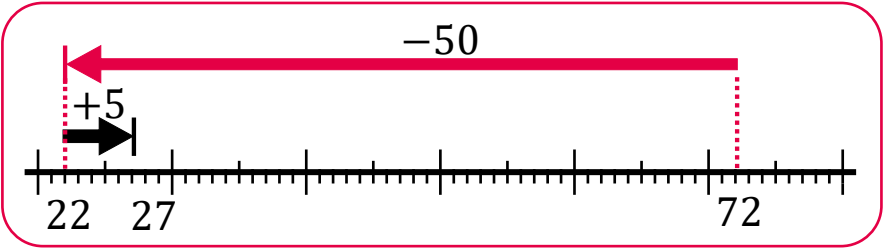
Talk Task: Subtraction strategies



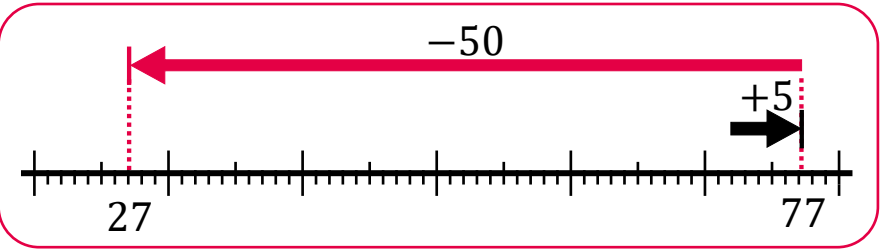
The item I want costs £72.
I have saved £45.



$$72 - 45 = 72 - 40 - 5$$



$$72 - 45 = 72 - 50 + 5$$



$$72 - 45 = 77 - 50$$



$$72 - 45 = 5 + 20 + 2$$

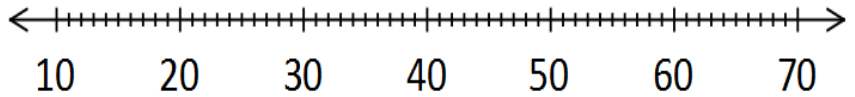
Pack 6 Session C

Activity: Subtraction strategies

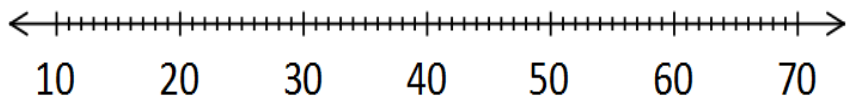
1) Draw arrows on each diagram to show the strategy that is described

$63 - 48$

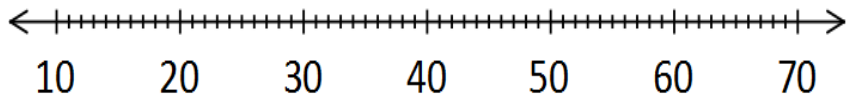
Subtract 50
then add 2



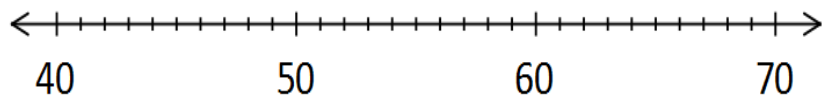
Subtract 3 then
subtract 40
then subtract 5



It is the same as
65 subtract 50



Find the difference
between 48 and 63



2) Calculate $135 - 98$ in two different ways and draw a diagram to show each.

Strategy 1

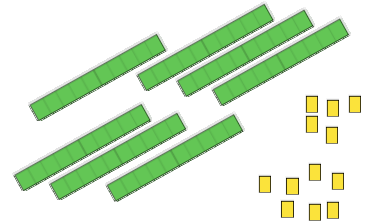
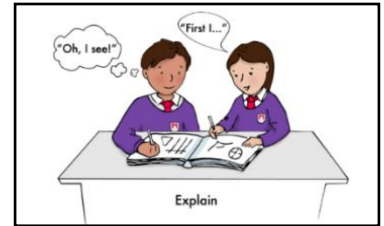
Strategy 2

Pack 6 Session D

Talk Task: Subtraction written method

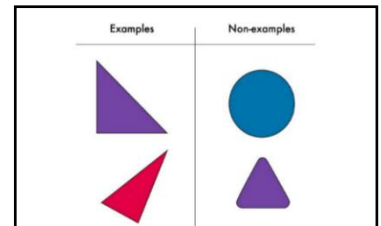
$$\begin{array}{r} 82 \\ - 45 \\ \hline 43 \end{array}$$

$$\begin{array}{r} \overset{7}{8} \overset{1}{2} \\ - 45 \\ \hline 47 \end{array}$$



Generate examples

$$\begin{array}{r} 2 \quad 4 \quad 3 \\ - \square \quad \square \quad \square \\ \hline \end{array}$$



$243 = 200 + 40 + 3$

$243 = 200 + 30 + 13$

$243 = 100 + 140 + 3$

$243 = 100 + 130 + 13$

Pack 6 Session D

Activity: Subtraction written method

1) Work out the missing digits to correctly complete each calculation.

a)

$$\begin{array}{r} 53 \\ - \square 6 \\ \hline 1\square \\ \hline \end{array}$$

b)

$$\begin{array}{r} 516 \\ - \square\square 4 \\ \hline 29\square \\ \hline \end{array}$$

c)

$$\begin{array}{r} 3\square 4 \\ - \square 2 6 \\ \hline 5\square \\ \hline \end{array}$$

2) Choose numbers that will create calculations that will need

a) regrouping once

$$\begin{array}{r} 485 \\ - \square\square\square \\ \hline \\ \hline \end{array}$$

b) regrouping twice

$$\begin{array}{r} 485 \\ - \square\square\square \\ \hline \\ \hline \end{array}$$

3) Write subtraction calculations with the answer 167 and sort them:

do not involve regrouping

involve regrouping