Year 6 maths – Week Beginning 18.05.20

Theme	Word Problems lesson 1	Word Problems lesson 2	Word Problems lesson 3	Negative Numbers lesson 1	Negative Numbers lesson 2
Factual fluency (to aid fluency)	Practise solving multi-step problems here	Practise solving missing information problems here	Practise a trial and error approach here	Practise finding the order here	Solve problems with Venn diagrams here
Problem/ activity of the day **Remember, just like in class, you can still show the depth of your knowledge** LINK	**(Lesson 1 resources below)** **MAKING LINKS:** In year 5 and 6, we learnt strategies for solving problems involving the four operations **THINK: (support below)** The population of town A is 3 times greater than the population of town B The population of town A is 30,000 more town C The total population of all 3 towns is 390, 000 What would this look like as a bar model? What questions could we ask/answer using this information? **SEE: (model below)** Watch lesson video here. **DO:** Use what you have learned today to solve the problems.	**(Lesson 2 resources below)** **MAKING LINKS:** In lesson 2, we learnt strategies for solving problems involving the four operations **THINK: (support below)** A wallet costs £24.90. Six belts cost £16.30 **more** than the **total** of 3 wallets and 2 belts. What would this look like as a bar model? What questions could we ask/answer using this information? **SEE: (model below)** Watch lesson video here. **DO:** Use what you have learned today to solve the problems.	**(Lesson 3 resources below)** **MAKING LINKS:** Over the last 2 days, we have tried a wide range of problems with different contexts. Today, we will apply that understanding **THINK: (support below)** 974 ÷ 25 = Solve the problem then think of word problems (some easier, some harder) linked to this calculation. What real life situations would use this calculation? TIP: You could try the following contexts: - people sharing money - making necklaces using beads - putting liquid into containers Challenge yourself to create and solve word problems using different numbers and calculations **SEE: (model below)** Watch lesson video here. **DO:** Now try to solve the problems below.	**(Lesson 4 resources below)** **MAKING LINKS:** In year 5, we counted through zero with negative numbers **THINK: (support below)** 4 – 7 = -3 -2 + 6 = 4 Are they correct? How many ways can you prove it? What is the most efficient way to calculate with negative numbers? **Explore:** A number line Number bonds / known facts Bridging through zero Compensation (1 – 6 = 0 – 5) **SEE: (model below)** Watch lesson video here. **DO:** Use what you have learnt today to solve the problems.	**(Lesson 5 resources below)** **MAKING LINKS:** Yesterday, we learnt how to add and subtract with negative numbers **THINK: (support below)** 3 – 9 = Solve this then think of word problems (some easier, some harder) linked to this calculation. **TIP:** You could try the following contexts: - temperature - water levels - money - goal difference **SEE: (model below)** Watch lesson video here. **DO:** Use what you have learnt today to solve the problems.
Time to check	**Day 1 resources and answers (below)**	**Day 2 resources and answers (below)**	**Day 3 resources and answers (below)**	**Day 4 resources and answers (below)**	**Day 5 resources and answers (below)**

DAY 1 RESOURCES:

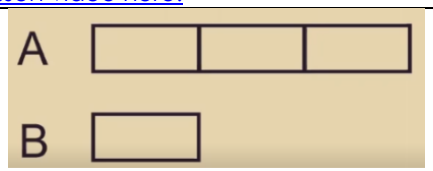
Quality First Education Trust

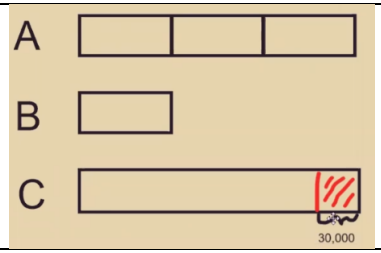
THINK:

The population of City A is 3 times greater than the population of City B
The population of City A is 30,000 more City C
The total population of all 3 towns is 390, 000
What would this look like as a bar model? What can you find out? Think of some challenging questions to ask/answer

SEE:

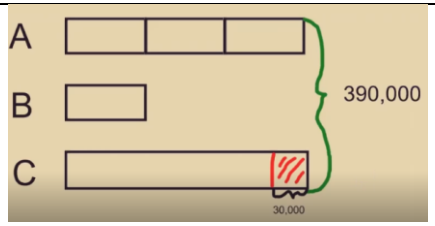
Watch lesson video here.

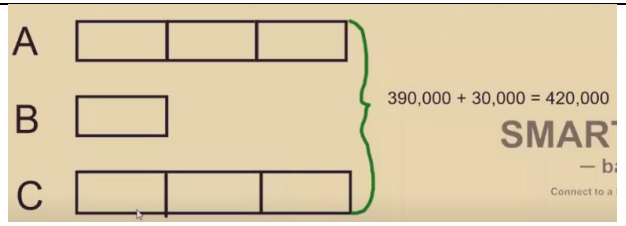




The population of City A is 3 times greater than the population of City B

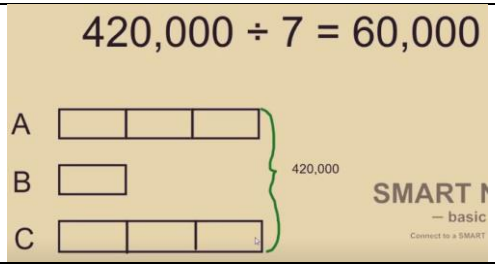
The population of City A is 30,000 more City C

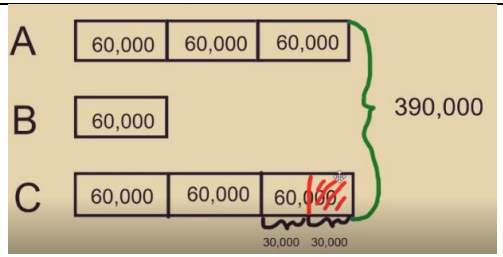




The total population of all 3 towns is 390, 000

Adding 30,000 to town C makes it equal to town A
Also, the bar model will now have 7 equal units
Don't forget that adding 30, 000 to Town C also adds 30, 000 on to the total





Find the value of 1 unit by dividing the total by the number of equal units

Don't forget to go back to the original problem
Town C's population is smaller than town A by 30, 000 people

DO:

1. Team A's stadium is three times larger than Team B's stadium.

Together, the stadiums hold 160, 000 fans.

What is the capacity of Team B's stadium?

2. Bag A and Bag B weigh 21 kg together

Bag A is 7.2kg heavier than bag B.

What is the weight of bag B?

3. Flower A is 2.5cm shorter than flower B

Total height of flower A and flower B is 9.5cm

Find the height of each flower

Deepening: Today, 296,848 people live in Blue Town

This is 4 times as many residents as there were this time last year.

How many more residents are there now than there were last year?

DAY 2 RESOURCES:

Quality First Education Trust

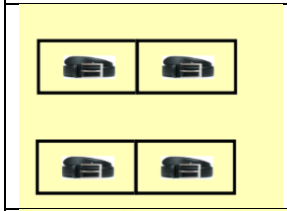
THINK:

A wallet costs £24.90.
Six belts cost £16.30 more than the total of 3 wallets and 2 belts.
What would this look like as a bar model?
What questions could we ask/answer using this information?

SEE: Watch lesson video here.

These are wallets and belts. Think about what you know about them and what they cost

In this problem, a wallet costs £24.90



Six belts cost £16.30 more than the total of 3 wallets and **2 belts.**

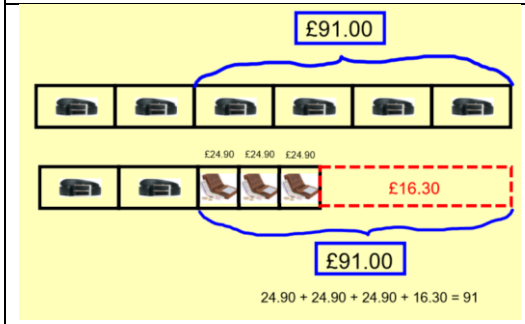
6 belts = **2 belts** + 4 belts

Each part of the problem has **2 belts** in common so that is a good place to start the bar model

One part is 6 belts (2 belts + 4 belts)

The other part is 2 belts + 3 wallets

If you add £16.30 to the bottom part then both bars are the same size



3 wallets + £16.30 = 4 wallets
3 wallets + £16.30 = £91.00
4 belts = £91.00

1 belt = £91.00 ÷ 4
1 belt = £22.75

Tip: Try to find something in common between the bars you are comparing

DO: See lesson 1 video for suitable method

1. Together, a jug, a bottle and a cup contain 2350 ml of water

The jug contains three times as much water as the cup.

The bottle contains 680ml more water than the cup.

How much water is there in the jug?

2. Child A bought 5 pizzas

Child B bought 3 pizzas. They also bought 2 portions of chips at £1.65 each

Altogether, Child B spent £8.50 less than Child A

How much did each pizza cost?

3. It took my friend 1hr 50 mins to bake 3 different cakes.

Cake B took twice as long to bake as cake C

Cake C took 10 minutes more than cake A

How long did it take to bake cake A?

Deepening: A bowl contains blue, green and red marbles. There are 95 red marble. The number of blue marbles is 5 times the number of green marbles. Together, the number of red and green marbles is 189 less than the number of blue marbles. How many marbles are there altogether?

DAY 3 RESOURCES:

Quality First Education Trust

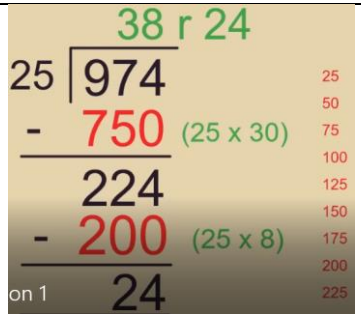
THINK: $974 \div 25 = ?$

Solve the problem then think of other word problems (some easier, some harder) linked to this calculation.
TIP: You could try the following contexts: people sharing money / making necklaces using beads / putting liquid into containers
What other numbers and calculations would work well for these contexts? Consider what the remainder might represent as a decimal and a fraction.

SEE: Long division here

Appropriate contexts and problems:

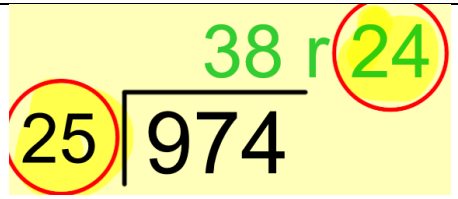
- £974 is shared equally among 25 people. How much money does each person receive? Answer: Each person receives £25.96
- A necklace is made using 25 beads. How many necklaces can be made using 974 beads? Answer: 38 necklaces (with 24 beads left over)
- 974ml of liquid is poured into 25ml containers. How many containers are needed to hold all the soap? Answer: 39 containers are needed (one container will not be full)

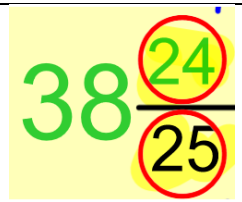


Long division:

1. Write out multiples of the divisor (25) to one side
2. Subtract the largest multiple that you can from the dividend (974)
3. Subtract another multiple from what is left
4. Repeat this until you cannot subtract any more
5. Check your answer using multiplication (974 = 25 x 38 + 24)

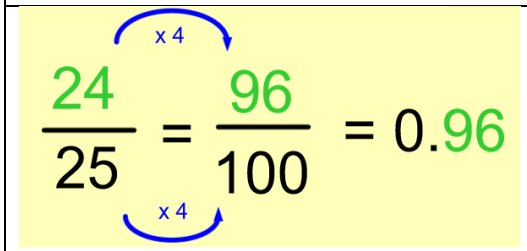
Challenge yourself with other calculation methods here





38 r24 means $38\frac{24}{25}$

The remainder is always the numerator and the divisor is always the denominator



Find remainders as a decimal by converting into tenths, hundredths or thousandths

$$974 \div 25 = 38\ r24 = 38\frac{24}{25} = 38.96$$

You can give your remainder 3 different ways. Use all 3 when creating and solving your problems

DO: ***Solve these problems***

1. Holly has 748ml of lemon juice. 28ml of lemon juice is needed for each cup of lemonade.

How many cups of lemonade can she make?

2. An 18.9m length of wire is cut equally into 35 parts.

What is the length of each part?

3. A baker used 52g of flour to make one cupcake.

What is the largest number of cupcakes he can make with 1kg of flour?

Deepening

Hannah bought some boxes of chocolate chip cookies (£1.30 each) and some cinnamon rolls (85p each)

She spent a total of £39.85 and bought 40 items altogether.

How many cinnamon rolls did she buy?

DAY 4 RESOURCES:

Quality First Education Trust

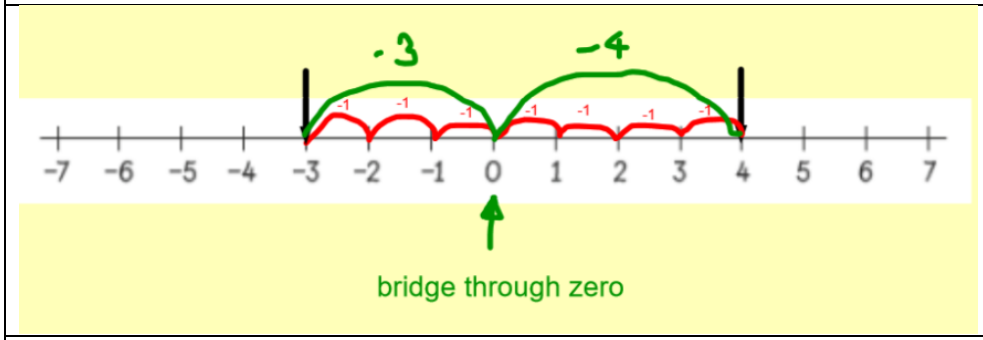
THINK: look at these calculations

4 – 7 = -3	-2 + 6 = 4

Are they correct? How many ways can you prove it?
What is the most efficient way to calculate with negative numbers?
Explore:
A number line
Number bonds / known facts
Bridging through zero
Compensation (1 – 6 = 0 – 5)

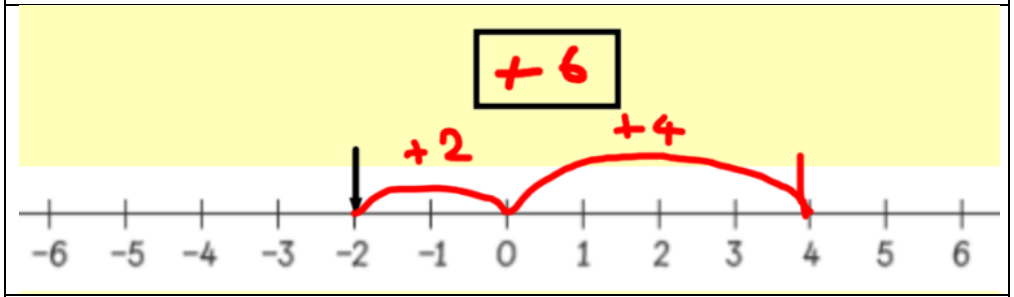
SEE: Watch lesson video here.

4 – 7 = -3



When subtracting, you move from right to left
Bridging through zero makes it easier to add and subtract negative numbers mentally

-2 + 6 = 4



When adding, you move from left to right
Bridging through zero makes it easier to add and subtract negative numbers mentally

DO:

Solve these problems

a) 2 – 3 =	b) 2 – 4 =	c) 3 – 5 =
d) 1 – 4 =	e) -3 + 4 =	f) -1 – 2 =
g) 5 – 6 =	h) 3 – 7 =	i) -2 – 3 =
j) -4 + 9 =	k) -5 + 7 =	l) 0 – 3 =
m) -2 + 9 =	n) 7 – 9 =	o) -4 + 5 =
p) -1 – 7 =	q) 0 – 6 =	r) 4 – 10 =
s) 1 – 8 =	t) -6 + 6 =	u) -6 + 16 =
v) -12 – 8 =		

Deepening

1) a – b = -8

If a and b are both 1-digit positive numbers, what could b be?

2) x + y = -8

If x is a negative 1-digit number and y is a positive whole number, what could x and y be?

DAY 5 RESOURCES:

Quality First Education Trust

THINK:

$$3 - 9 = ?$$

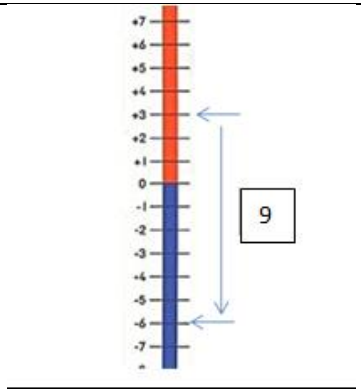
Solve this then think of word problems (some easier, some harder) linked to this calculation.
TIP: You could try the following contexts: temperature / water levels / money / goal difference

SEE: Watch lesson video here.

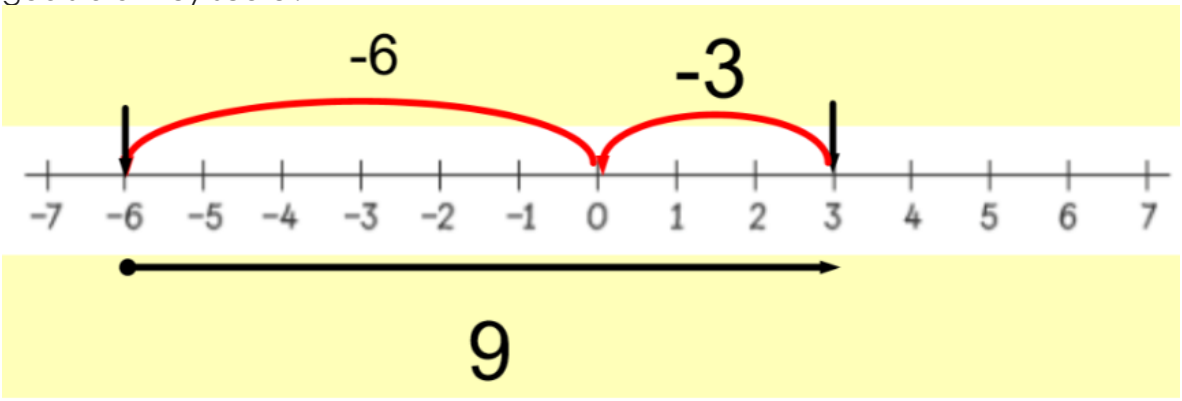
$$3 - 9 = -6$$

The temperature was 3 °C in the day time and it dropped to -6 °C. What is the difference between the day time and night time temperature?

The shoe shop was on Level 3 of the shopping centre and the lift went down 9 floors to the car park. What level was the car park on?



Team A conceded 9 goals last season and had a goal difference of -6. How many goals did they score?



When subtracting, you move from right to left (or top to bottom)
When adding, you move from left to right (or bottom to top)
Bridging through zero makes it easier to add and subtract negative numbers mentally

DO:

Solve these problems

1. Four friends have a penalty shootout

Each player receives 4 points for every goal they score

Each player has 2 points deducted (taken away) for every shot they miss

Calculate the total score for each player

	Number of goals	Number of misses	Score
Example	1 (points: 4)	3 (points: -6)	4 – 6 = -2
Person A	2	5	
Person B	1	6	
Person C	0	7	
Person D	3	4	

2. Create a tricky negative number quiz and league table for people at home (20 questions)

Each player scores 2 points for every correct answer

Each player loses 3 points for every incorrect answer

Calculate the score for each player

Deepening. a + b = - 3

Find all the possibilities for a
Find all the possibilities for b

What do you notice about the relationship between a and b?

ANSWERS:

Quality First Education Trust

Lesson 1 Answers

1. Answer: 120,000
160, 000 ÷ 4 = 40, 000 (1 unit)
40, 000 x 3 = 120,000 (3 units)

2. Bag B weighs 6.9kg and Bag A weighs 14.1kg
21 – 7.2 = 13.8 (2 units)
13.8 ÷ 2 = 6.9

3. Answer:
Flower A 3.5cm and Flower B = 6cm
9.5 + 2.5 = 12
12 ÷ 2 = 6

Deepening
There are 222, 636 more residents this year than there were last year
296,848 - 74, 212 = 222, 636

Lesson 2. Answers

1. 1002ml
Solution: (2350 – 680) ÷ 5 = 334 (1 bar)
Cup 334ml
Bottle 1014ml

2. Each pizza cost £5.90
Solution: 2 bars = 1.65 + 1.65 + 8.50 = 11.80
1 bar = 5.90

3. It took 20 minutes to bake cake A
It took 30 minutes to bake cake C
It took 60 minutes to bake cake B

Solution: total time – 30mins = 80 mins
4 bars = 80 mins
1 bar = 20 mins

Deepening: There are 521 marbles altogether

Lesson 3. Answers

1. Holly can make 26 cups of lemonade
Solution: 748 ÷ 28 = 26r20
= 26 $\frac{20}{28}$ = 26 $\frac{5}{7}$

2. The length of each part is 0.54m or 54cm
Solution: 1890 ÷ 35 = 54

3. The baker can bake 19 cupcakes
Solution: 1000 ÷ 52 = 19r12
= 19 $\frac{12}{52}$ = 19 $\frac{3}{13}$

Deepening
She bought 27 cinnamon rolls and 13 cookie boxes

Lesson 4 Answers

a) 2 – 3 = -1	b) 2 – 4 = -2	c) 3 – 5 = -2
d) 1 – 4 = -3	e) -3 + 4 = 1	f) -1 – 2 = -3
g) 5 – 6 = -1	h) 3 – 7 = -4	i) -2 – 3 = -5
j) -4 + 9 = 5	k) -5 + 7 = 2	l) 0 – 3 = -3
m) -2 + 9 = 7	n) 7 – 9 = -2	o) -4 + 5 =1
p) -1 – 7 = -8	q) 0 – 6 = -6	r) 4 – 10 = -6
s) 1 – 8 = -7	t) -6 + 6 = 0	u) -6 + 16 = 10
v) -12 – 8 = -20		

Deepening

1) a = 1 and b = 9

2) x = -9 and y = 1

Lesson 5 Answers

Person A = -2
4 + 4 – 2 – 2 – 2 – 2 – 2 = (2 x 4) + (5 x -2) = 8 – 10 = -2

Person B = -8
4– 2 – 2 – 2 – 2 – 2 - 2 = (1 x 4) + (6 x -2) = 4 – 12 = -8

Person C = -14
– 2 – 2 – 2 – 2 – 2 – 2 – 2 = (7 x -2) = -14

Person D = 4
4 + 4 + 4 – 2 – 2 – 2 – 2 = (3 x 4) + (4 x -2) = 12 – 8 = 4

2. Answers will vary

Deepening.
Answer: the difference in the digits is always 3

When a is negative and b is positive	When a is positive and b is negative
-4 + 1 = -3 -5 + 2 = -3 -6 + 3 = -3 -7 + 4 = -3	1 – 4 = -3 2 – 5 = -3 3 – 6 = -3 4 – 7 = -3