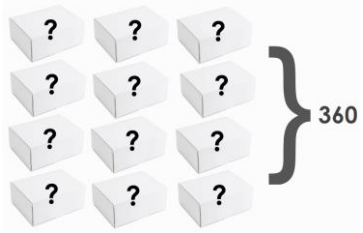
Year 6 maths – Week Beginning 11.05.2020

Theme	**Multiplication Lesson 1** Strategies to multiply, using multiples of ten.	**Multiplication Lesson 2** Using Column Method	**Division Lesson 1** Long Division	**Division Lesson 2** Long Division with and without Remainders	**Division Lesson 3** Long Division with and without Remainders; efficient methods
Factual fluency (to aid fluency)	Multiply by multiples of 10 (numbers ending in zero) here	Multiply by a two digit number here	Relate multiplication and division facts here, then Practise your division facts to 12	Divide by 1 digit numbers to warm up, here	Practise interpreting remainders 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:** We learnt how to multiply by multiples of ten in Year 5. To do this, we need to move the digits on a place value grid. **THINK: (support below)** Can you help me with this problem? How much orange juice is there in 20 bottles like this one? Can you think of more than one way to solve?  **SEE: (model below)** Watch this video to see different methods of solving the problem. **DO:** How much apple juice is there in 30 bottles like this one?  Use what you have learnt today to solve the problems in the "Day 1 Resources" page below.	**(Lesson 2 resources below)** **MAKING LINKS:** Yesterday, we learnt strategies to multiply by multiples of ten. Use this in your learning today! We learnt about multiplication at the beginning of the year. Remember about: - Lining up numbers correctly - Using place holder zero **THINK: (support below)** A standard box of strawberries contains 113 strawberries. A jam company needs 2500 strawberries for strawberry jam. Would ordering 23 standard boxes of strawberries be enough for them?  **SEE: (model below)** Watch this video to see different methods of solving the problem. **DO:** Use what you have learnt today to solve the questions on Day 2 Resources page below.	**(Lesson 3 resources below)** **MAKING LINKS:** Yesterday we learnt how to multiply. Today, we'll be practising division, which is the inverse of multiplication. **THINK: (support below)** Can you help me with this problem? Cupcakes are baked in batches of 360. Then they are packed into 12 boxes. How many cupcakes are there in each box?  **SEE: (model below)** Watch this video to see different methods of solving the problem. **DO:** Use what you have learnt today to solve the questions on Day 3 Resources page below.	**(Lesson 4 resources below)** **MAKING LINKS:** Yesterday we learnt how to divide using long division, and how to use known facts to help us. **THINK: (support below)** Can you help me with this problem? Is it possible to share £3,296 equally among 32 people?   **For remainders:** 23 children shared 4669 stickers equally among them. How many stickers did each pupil get?  **SEE: (model below)** Watch this video to see how to solve this question. **DO:** Use what you have learnt today to solve the questions on Day 4 Resources page below.	**(Lesson 5 resources below)** **MAKING LINKS:** Yesterday we learnt how to solve problems with long division. Let's keep practising, and find more efficient methods! **THINK: (support below)** 1.) 7,192 people registered for a "Help the NHS" run. My friend George wants to make teams of 31. How many teams will there be?  2.) Pears are packed into trays of 96. How many trays are needed to pack 500 pears?  **SEE: (model below)** Watch this video to see how to solve this question. **DO:** Use what you have learnt today to solve the questions on Day 5 Resources page below.
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:

THINK:

How much orange juice is there in 20 bottles like this one?
Can you think of more than one way to solve it?

SEE:

Watch this video to see different methods of solving the problem.

Method 1:

414 x 20 is the same as 414 x 10, two times!
To multiply by 10, move the digits on a place value grid like this one (or do it in your head)

TH	H	T	O
Thousands	Hundreds	Tens	Ones

414 x 10 = 4,140 (now I need to multiply this by two OR add this twice)
4140 x 2 = 8,180
4140 + 4140 = 8,280.

Method 2:

414 x 20 is the same as 414 x 2 x 10.
I will use formal written (column) method to multiply 414 x 2.

$$\begin{array}{r} 414 \\ \times \quad 2 \\ \hline 828 \end{array}$$

414 x 2 = 828. Now I can multiply that by 10.
828 x 10 = 8280.I got the same answer using both methods so I must be right!

THINK:

How much apple juice is there in 30 bottles like this one?

SEE:

Method 1:

241 x 30 is the same as 241 x 10, three times.
241 x 10 = 2410.
2410 + 2410 + 2410 = 7

Method 2:

241 x 30 = 241 x 3 x 10
I will use column method to multiply 241 x 3.
I need to remember to regroup the 1 from the 12!

$$\begin{array}{r} {}^{1}241 \\ \times \quad 3 \\ \hline 723 \end{array}$$

241 x 3 = 723.
723 x 10 = 7230.

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DO:

1.)
a.) 234 x 10
b.) 234 x 20
c.) 234 x 40

2.)
a.) Multiply 367 by 60.
b.) Find the product of 2,304 and 30.

3.)
a.) Show 2 different methods to solve 3,124 x 20
b.) Show 2 different methods to solve 6,235 x 30

4.) Think of a word problem to write where you would multiply a 3-digit number, e.g. 231, by a multiple of ten, e.g. x 20 or x 30.

Vocabulary you might want to use:
How many…? How much…? boxes bottles Kg g litres ml money £ pence metres cm
… is /are there? … is / are needed?

5.) Explain in steps how you would do one of the methods we learned today.

TOP TIPS:
You could start like this: A method to multiply by multiples of 10 is to multiply …
Give examples to show what you mean, e.g. 324 x 20 is the same as …

DAY 2 RESOURCES:

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THINK:

A standard box of strawberries contains 113 strawberries. A jam company needs 2500 strawberries for strawberry jam. Would ordering 23 standard boxes of strawberries be enough for them?

SEE:

Watch this video to see different methods of solving the problem.

Method 1:

23 x 113 is the same as 20 x 113 and 3 x 113.
I can use the strategy we learned yesterday to do 20 x 113:
20 x 113 is the same as 2 x 10 x 113.
2 x 113 = 226. 226 x 10 = 2260.
Now I need to work out 3 x 113.

```
  113
x   3
-----
  339
```

3 x 113 = 339.
I've just worked out
20 x 113 = 2260.
3 x 113 = 339.
Now I need to add these two together to get my total:
2260 + 339 = 2599.

Method 2:

For method 2, we will combine the strategies in Method 1, but we'll use Column Method to put them together.
First, we'll multiply the ones from 23 (3) with each digit.
Then we'll multiply the tens from 23 (20) with each digit.

When we multiply by the tens, we must remember to put a "Zero place holder" in the ones column so we can remember that we're multiplying by a number in the tens column.

```
  113
x  23
-----
  339
+2260
-----
 2,599
```

Zero place holder

DO:

1.)
a.) 563 x 20
b.) 563 x 4
c.) 563 x 24
d.) 124 x 30
e.) 124 x 8
f.) 124 x 38

2.)
a.) Multiply 345 by 72.
b.) Find the product of 9,561 and 21.

3.)
a.) Show 2 different methods to solve 2,578 x 57
b.) Show 2 different methods to solve 7,564 x 39

Remember:
2,578 x 57 is the same as 2,578 x 50 (which is the same as 2,578 x 5 x 10) and 2,578 x 7.
Add both answers together (2,578 x 50 and 2,578 x 7) to get your total.

Deepening:
Put the digits 1, 2, 3 or 4 in the boxes to make these equations correct:

a.)

```
  2 □ 3
x   □ 3
-------
  6 □ 9
+ □ 2 6 0
---------
  4 8 9 9
```

b.)

```
  □ 4 2
x   □ 2
-------
  2 8 □
+ 2 8 4 0
---------
  □ 1 2 4
```

DAY 3 RESOURCES:

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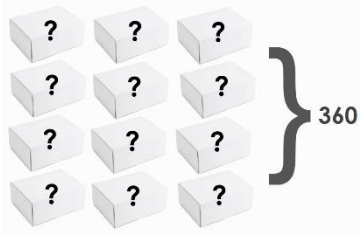
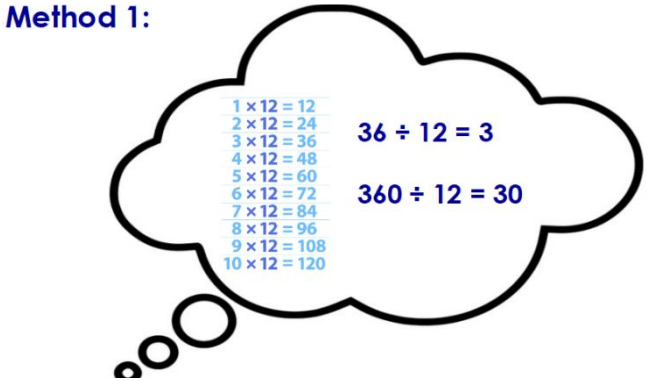
THINK:
Cupcakes are baked in batches of 360. Then they are packed into 12 boxes. How many cupcakes are there in each box?

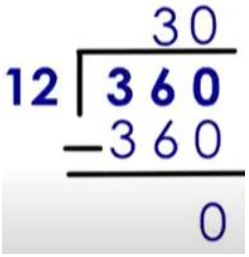


SEE: Watch this video to see different methods of solving the problem.

Method 1:
To solve 360 ÷ 12, I can firstly think about my knowledge of my times tables. I know that 3 x 12 = 36, so I also know that 36 ÷ 12 = 3. I can then derive other facts from this, by making the numbers 10 times bigger. So I also know that 360 ÷ 12 = 30.



Method 2:
We can't always solve division problems in our heads though, and sometimes we need to use formal methods of solving, like this one, which is called the formal written method of short division "bus stop division". For a 2-digit number, it's a good idea to use long division, which is what we'll be working on this week.



First, think: How many times does 12 go into 36 (I know this really means 360). I know 12 goes into 36 three times, so I write the 3 above the tens column, the six. Then I multiply: 3 tens (because it's in the tens column) x 12 = 360. So now I write 360 underneath the original one. I then take away: 360 – 360 = 0. This tells me I have nothing leftover.

DO:

1.)
a.) 340 ÷17 =
b.) 3,400 ÷17 =
c.) 720 ÷ 36 =
d.) 7,200 ÷ 36 =
e.) 920 ÷ 23 =
f.) 9,200 ÷ 23 =

TOP TIPS:
Think about your knowledge of your times tables.
2 x 17 = 34 so I also know that 34 ÷ 17 = 2.
You can then derive other facts from this by making the numbers 10 times bigger.
Use your place value chart when x 10 and x 100.

2.)
a.) 420 sweets are packed into packets of 14 each. How many packets of sweets are there?

b.) 279 Lego bricks are arranged in 31 rows. How many bricks are there in each row?

3.)
If I know that 48 ÷ 12 = 4, what other division facts can I derive from that? (e.g. I also know that 480 ÷ 12 = 40).

Deepening:
How many different division questions can you come up with where the answer is 60?
Can you choose numbers in the 10s, 100s, 1000s to divide?
How about dividing decimals?

You can also show the depth of your knowledge by trying some of the things here.

DAY 4 RESOURCES:

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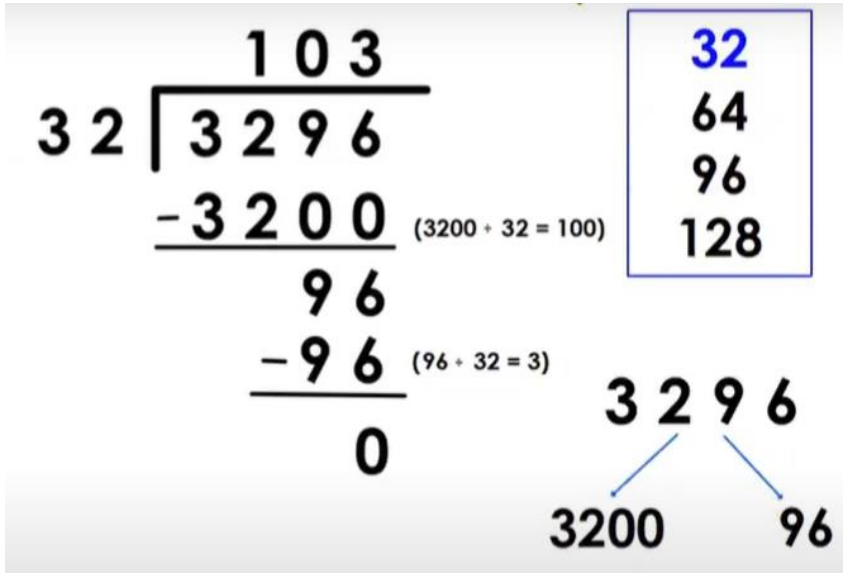
THINK:
Is it possible to share £3,296 equally among 32 people?

SEE: Watch this video to see how to solve this question.

I will write out some of my 32 x tables first to help me out. If I see some of these numbers, it will help me with my division.
32, 64, 96, 128.
I can also split up 3296 into pieces which are easily divisible by 32 to help me. I can split it up into 3200 and 96.

To do long division:

- I think in my head: how many 32s go into 3200? 100. So I write 1 in the hundreds column.
- Then I multiply 100 x 32 = 3200. I write this under 3296.
- Then I take away, because I've already shared 3200 now, and I don't need to share it any more. 3296- 3200 = 96.
- Then I think in my head: how many times does 32 go into 96? It goes 3 times, so I write 3 in the ones column. I take care to put a zero in the tens column too.



DO:

1.)
a.) 1,938 ÷19 =
b.) 5,454 ÷ 27 =
c.) 7,308 ÷ 36 =

TOP TIPS
Think in your head:
How many 19s go into 1,900? Is it 10? Is it 20?
How many 27s go into 5,400? Is it 10? Is it 20?
How many 36s go into 7,308? Is it 10? Is it 20?

2.)
a.) Jeff packs 1456 buttons into small bags of 14 buttons each. How many bags of buttons does he have?

b.) 7575ml of water fills 25 cups equally. How much water is there in each cup?

c.) A dance team with 16 members shared their £8064 prize money equally. How much did each member get?

3.)
a.) A factory put cakes into boxes of 16. How many boxes can they fill with 3745 cakes? How many cakes will be left over?

b.) A factory puts 15 pencils in a pack. How many full packs can they make with 5312 pencils? How many pencils will be left over?

DAY 5 RESOURCES:

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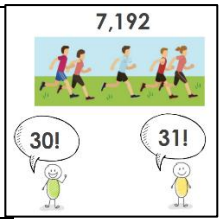
THINK:

7,192 people registered for a "Help the NHS" run. My friend Sally wants to put them into teams of 30, but George thinks this is not possible, the teams should be of 31. Who is correct? If we divide by 31, how many teams will there be?

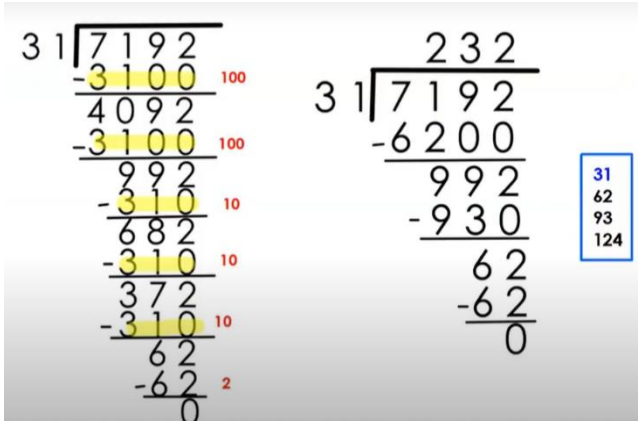


SEE:

Watch this video to see how to solve this question.

I know that Sally can't be right because 7192 ends with a 2 in the ones column and Sally wants to divide by a multiple of ten.

In order to divide by 31, I will use the same strategy I used yesterday – long division. If I find it tricky to know how much to share each time, I can keep sharing easy multiples of 31, like 3100 or 310 (like in the example on the left, in the picture).



A more efficient strategy is to share the largest possible amounts each time. See the example on the right in the picture.

For questions like this:

Pears are packed into trays of 96. How many trays are needed to pack 500 pears?

The best thing to do is to **estimate**. I know that 96 is close to 100, so I can estimate that 96 will go into 500 approximately 5 times. I can then check to see whether that answer was reasonable by dividing.

DO:

1.) Division without remainders

a.) 4, 899 ÷ 23

b.) 7,888 ÷ 34

c.) A baker needs to pack 5,052 cookies into boxes of 12. How many boxes will she need?

TOP TIPS

1a) Multiples of 23: 23, 46, 69…

Which multiple of 23 is closest to 4,899?

23 x 2 = 46

23 x 20 = 460

23 x 200 = 4,600

1b) Multiples of 34: 34, 68, 102…

Which multiple of 34 is closest to 7,888?

34 x 2 = 68

34 x 20 = 680

34 x 200 = 6,800

1c) Multiples of 12: 12, 24, 36, 48, 60

Which multiple of 12 is closest to 5,052?

12 x 4 = 48

12 x 40 = 480

12 x 400 = 4,800

2.)Division with remainders

a.) 1,126 ÷ 36

b.) A picker picked 690 strawberries. If she packs them into regular boxes of 44, how many boxes will she have? How many strawberries will be left over?

c.) If the picker (from question b) decides to pack the strawberries into smaller boxes of 26, how many boxes will she have? How many strawberries will be left over?

ANSWERS:

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Day 1:

SEE:

How much orange juice is there in 20 bottles like this one?
There are 8280ml in 20 bottles.
How much apple juice is there in 30 bottles like this one?
There are 7230 ml in 30 bottles.

DO:

1.)
a.) 234 x 10 = 2,340
b.) 234 x 20 = 4,680
c.) 234 x 40 = 9,360

2.)
a.) Multiply 367 by 60. 22,020
b.) Find the product of 2304 and 30. 69,120

3.)
a.) Show 2 different methods to solve 3124 x 20

Method 1:
3,124 x 10 = 31,240
31,240 + 31,240 = 62,480

Method 2:
3,124 x 2 x10 =
6,248 x 10 = 62,480

b.) Show 2 different methods to solve 6235 x 30

Method 1
6,235 x 10 = 62,350
62,350 + 62,350 + 62,350
= 187,050

Method 2:
6,235 x 3 x10 =
18,705 x 10 = 187,050

4.) Answers will vary
5.) Answers will vary

Day 2:

DO:

1.) a.) 563 x 20 = 11,260 b.) 563 x 4 = 2,252 c.) 563 x 24 = 13,512	d.) 124 x 30 = 3,720 e.) 124 x 8 = 992 f.) 124 x 38 = 4,712

2.)
a.) Multiply 345 by 72. 24,840
b.) Find the product of 9561 and 21. 200,781

3.)
a.) Show 2 different methods to solve 2,578 x 57

Method 1:
2,578 x 50 = 128,900
2,578 x 7 = 18,109
128,900 + 18,109 = 147,009

Method 2:

```
  2,578
x    57
 18109
+128900
 147009
```

b.) Show 2 different methods to solve 7564 x 39

Method 1:
7,564 x 30 = 226,920
7,564 x 9 = 68,076
226,920 + 68,076 = 294,996

Method 2:

```
  7564
x   39
 68076
+226920
 294996
```

Deepening: ANSWERS

a.)

```
  213
x  23
  639
+426 0
```

b.)

```
  142
x  22
  284
+284 0
```

ANSWERS:

Day 3:

DO:

1.)
a.) 340 ÷17 = 20
b.) 3400 ÷17 = 200
c.) 720 ÷ 36 = 20
d.) 7,200 ÷ 36 = 200

e.) 920 ÷ 23 = 40
f.) 9,200 ÷ 23 = 400

2.)
a.) 420 sweets are packed into packets of 14 each. How many packets of sweets are there? There are 30 packets of sweets.

b.) 279 Lego bricks are arranged in 31 rows. How many bricks are there in each row? There are 9 bricks in each row.

3.)
If I know that 48 ÷ 12 = 4, what other division facts can I derive from that? (e.g. I also know that 480 ÷ 12 = 40).
Some facts you may have found are:
480 ÷ 12 = 40
4800 ÷ 12 = 400
480 ÷ 120 = 4
4800 ÷ 1200 = 4
4.8 ÷ 1.2 = 4

Day 4:

DO:
1.)
a.) 1938 ÷19 = 102
b.) 5454 ÷27 = 202
c.) 7308 ÷ 36 = 203

2.)
a.) Jeff packs 1456 buttons into small bags of 14 buttons each. How many bags of buttons does he have? Jeff has 104 bags.

b.) 7575ml of water fills 25 cups equally. How much water is there in each cup? Each cup has 303 ml.

c.) A dance team with 16 members shared their £8064 prize money equally. How much did each member get? Each member got £504.

3.)
a.) A factory put cakes into boxes of 16. How many boxes can they fill with 3745 cakes? How many cakes will be left over? They can fill 234 boxes. There will be 1 cake left over.

b.) A factory puts 15 pencils in a pack. How many full packs can they make with 5312 pencils? How many pencils will be left over? They can make 354 packs. There will be 2 pencils leftover.

Day 5:

DO:

1.) Division without remainders
a.) 4899 ÷23 = 213
b.) 7888 ÷34 = 232
c.) A baker needs to pack 5052 cookies into boxes of 12. How many boxes will she need? She will need 421 boxes.

2.)Division with remainders
a.) 1126 ÷ 36 = 31.27 or 31 remainder 10

b.) A picker picked 690 strawberries. If she packs them into regular boxes of 44, how many boxes will she have? How many strawberries will be left over? 15 boxes with 30 plums leftover.

c.) If the picker (from question b) decides to pack the strawberries into smaller boxes of 26, how many boxes will she have? How many strawberries will be left over? 26 boxes with 14 plums leftover.