

Day	Learning Objective	Teaching and Models	Tasks and Expected Outcomes
1	I can read and write Roman numerals	<p>Hello 4HB Maths! Welcome to your first week of Maths lessons online! I hope you are all doing well and keeping up with Mathletics!</p> <p>On Google Classroom, you will find the powerpoint presentations and videos for these lessons, so take a look.</p> <p>First, a useful link: https://www.transum.org/software/SW/Starter_of_the_day/starter_November2.asp</p> <p>This link takes you to one of our favourite puzzles to get lessons started. That's right, the incredible Countdown! Each time you refresh the page, it provides a fresh set of numbers so you will never get bored. The aim of the game is to make the target number using the numbers provided. You can only use each number once, however you may use any method you can think of in search of the answer. Addition, multiplication, division and subtraction. I have included one or two at the start of each lesson as they are really good practice for all of the skills I have just mentioned.</p> <p>Bessemer has also decided not to cover any new topics as these would best be covered at school, so we will be using these online lessons as a chance to review all of the topics we have covered so far. That means that the children shouldn't find any of the information or questions too surprising.</p> <p>Let's start today with Roman Numerals.</p>	<p>Problem 1. Write the following numbers using Roman numerals:</p> <ul style="list-style-type: none"> a. 47 b. 123 c. 72 d. 334 e. 220 <p>Solution to a: 40 is represented as 50 – 10 XL = 40 because the X before the L means 50-10 7 is 5 + 2 or V + II = VII XLVII = 47</p> <p>The answers are on the powerpoint presentation.</p> <p>Bonus questions: f. 99 = g. 701 = h. 1250 =</p> <p>Problem 2. Can you spot the mistakes in my work? In this task we will find mistakes in Roman Numerals. Mr. Burn says, "45 is written XXXXV because there are 4 tens and 1 five." I would answer this by explaining my reasoning (next page). I know that Mr. Burn is incorrect because no numeral is ever repeated more than 3 times. Mr. Burn has written 40 as X + X + X + X when it should be written as 50 – 10, or XL.</p>

This week our success criteria is:

I can read and write Roman Numerals to 100 and beyond

I can add and subtract Roman Numerals

I can solve problems involving Roman Numerals

The way we write numbers, using Hindu-Arabic numerals, is hardly the only way to do so. Many civilizations used other means to denote numbers. For example, the Romans represented numbers using the numerals I, V, X, L, C, D, and M. These numerals represent the following numbers:

Roman Numeral	Hindu-Arabic Equivalent
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

Repeating a numeral up to three times represents addition of the number.

For example, III represents $1 + 1 + 1 = 3$. Only I, X, C, and M can be repeated; V, L, and D cannot be, and there is no need to do so.

Examples:

$$I + I + I = III$$

$$1 + 1 + 1 = 3$$

$$X + X + X = XXX$$

$$10 + 10 + 10 = 30$$

The correct answer is XLV.

Problem 2.

Find the mistakes in Mr. Burn's work and explain the correct answer.

- a. $350 = MMML$
- b. $24 = XXIII$
- c. $500 = CCCCC$
- d. $245 = CCVL$
- e. $50+10+1+1+1 = LXXIII$
- f. $100 + 90 + 9 = CCIX$
- g. $500 + 500 + 500 = MMD$

C + C + C = CCC

100 + 100 + 100 = 300

I + I + I + I = IIII

This does not work because we can only add 3

of the same numeral.

To make the number 4, we have to instead use the next rule...

To write a number that otherwise would take repeating of a numeral four or more times, there is a subtraction rule. Writing a smaller numeral to the left of a larger numeral represents subtraction.

For example, IV represents $5 - 1 = 4$ and IX represents $10 - 1 = 9$. The only pairs of numerals that use this subtraction rule are:

Roman Numeral	Hindu-Arabic Equivalent
IV	$4 = 5 - 1$
IX	$9 = 10 - 1$
XL	$40 = 50 - 10$
XC	$90 = 100 - 10$
CD	$400 = 500 - 100$
CM	$900 = 1000 - 100$

Writing numerals that decrease from left to right represents addition of the numbers.

For example, LX represents $50 + 10 = 60$

XVI represents $10 + 5 + 1 = 16$.

2	I can add and subtract Roman numerals	<p>Adding Roman numerals</p> <p>When we are faced with a number sentence which uses Roman numerals, we must first convert the numbers into Arabic numerals (our normal numbers).</p> <p>Example: $XII + XXV =$ First I must note down the numbers. $XII = 12$ and $XXV = 25$ Now I can add them together.</p> <p>Solution: $25 + 12 = 37$ $37 = XXXVII$</p> <p>Subtracting Roman numerals</p> <p>The same method can be applied when subtracting.</p> <p>Example: $C - VIII =$ First I must note down the numbers. $C = 100$ and $VIII = 8$ $100 - 8 = 92$ $92 = XCII$</p>	<p>Problem 1. Convert first, then answer in Roman numerals. The first one has been done for you.</p> <p>a. $L + L = 50 + 50 = 100 = C$ b. $III + V =$ c. $CL + VIII =$ d. $XL + LX =$ e. $C + CV + XII =$ f. $X + LVI + DC =$ g. $XVII + XIX =$</p> <p>Problem 2. Convert first, then answer in Roman numerals. The first one has been done for you.</p> <p>a. $C - XX = 100 - 20 = 80 = LXXX$ b. $CC - XXX =$ c. $D - C =$ d. $CLIX - XV =$ e. $LIV - VI =$</p>
3	I can solve problems involving Roman	<p>Today will be less instructive.</p> <p>Using what you already know about Roman numerals, I want you to have a go at solving different challenges.</p> <p>Try your best and do as much as you can!</p> <p>I have provided an example solution/approach to one of the challenges below.</p>	<p>https://www.transum.org/Maths/Activity/Jigsaw/Roman_Numerals.asp</p> <p>This link will take you to a Roman numerals puzzle!</p>

numera
ls

Mo says:

In the 10 times table, all the numbers have a zero. Therefore, in Roman Numerals all multiples of 10 have an X



Research and give examples to prove whether or not Mo is correct.

The ten times table features 10, 20, 30, 40 etc
Mo has noticed a pattern in that they all end in 0.
Roman numerals work differently. 10 is represented as X.
In order to find out if the same pattern holds I will use a systematic approach of writing out all the multiples of 10 as Roman numerals and see what patterns I can identify.

X, XX, XXX, XL, L, LX, LXX, LXXX, XC, C, CX...

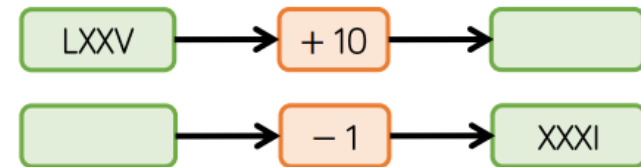
I have noticed that because of the Roman numeral system, the same pattern cannot work as it does for the 10 times table.
There is a pattern though. See if you can explain the pattern!

Each diagram shows a number in numerals, words and Roman Numerals.



Complete the diagrams.

Complete the function machines.



Solve the following calculation:

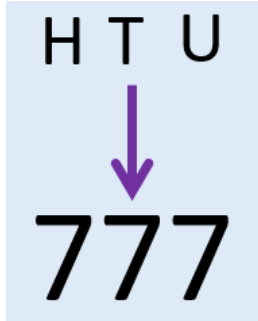
$$XIV + XXXVI = \underline{\quad}$$

How many other calculations, using Roman Numerals, can you write to get the same total?

			<p>1) $XIV + \square = LXXXVIII$</p> <p>2) $XXXIV + \square = CXI$</p> <p>3) $XXII + \square = XXXV$</p> <p>4) $LXII + \square = XCI$</p> <p>5) $XLV + \square = CIV$</p>																													
4	<p>I can round to the nearest, 10, 100, 1000</p>	<p>Rounding to 10, 100, 1000</p> <p>To round, simply put: Look at the digit in the column next to that which you're rounding to If it is 0 – 4, round down If it is 5 – 9, round up</p> <ul style="list-style-type: none"> Round 684 to the nearest 10 <p>Because I am rounding the number to the nearest 10, I need to look at the units column. There are 4 units. As this is less than 5, it means I do not round up. That means 684 to the nearest 10 is 680.</p> <div data-bbox="981 1018 1227 1342" style="text-align: center;"> <table style="margin: auto;"> <tr> <td style="padding: 0 10px;">H</td> <td style="padding: 0 10px;">T</td> <td style="padding: 0 10px;">U</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">↓</td> </tr> <tr> <td style="font-size: 2em;">6</td> <td style="font-size: 2em;">8</td> <td style="font-size: 2em;">4</td> </tr> </table> </div>	H	T	U			↓	6	8	4	<p>Task 1: Try rounding these numbers to the nearest 10...</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">19</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> <td style="padding: 5px;">36</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> </tr> <tr> <td style="padding: 5px;">22</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> <td style="padding: 5px;">44</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> </tr> <tr> <td style="padding: 5px;">83</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> <td style="padding: 5px;">99</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> </tr> <tr> <td style="padding: 5px;">57</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> <td style="padding: 5px;">516</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> </tr> <tr> <td style="padding: 5px;">74</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> <td style="padding: 5px;">117</td> <td style="padding: 5px;"><input style="width: 50px; height: 20px;" type="text"/></td> </tr> </table>	19	<input style="width: 50px; height: 20px;" type="text"/>	36	<input style="width: 50px; height: 20px;" type="text"/>	22	<input style="width: 50px; height: 20px;" type="text"/>	44	<input style="width: 50px; height: 20px;" type="text"/>	83	<input style="width: 50px; height: 20px;" type="text"/>	99	<input style="width: 50px; height: 20px;" type="text"/>	57	<input style="width: 50px; height: 20px;" type="text"/>	516	<input style="width: 50px; height: 20px;" type="text"/>	74	<input style="width: 50px; height: 20px;" type="text"/>	117	<input style="width: 50px; height: 20px;" type="text"/>
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If the number was slightly different...

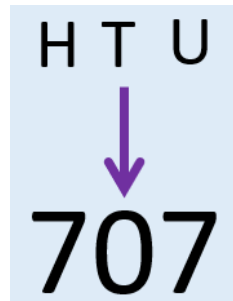
- Round 685 to the nearest 10
Because I am rounding the number to the nearest 10, I need to look at the units column.
There are 5 units. As this is 5, it means I do round up. That means my tens column is going to be increased by 1.
That means 685 to the nearest 10 is 690.



- Round 777 to the nearest 100
Because I am rounding the number to the nearest 100, I need to look at the tens column.
There are 7 tens. As this is more than 5, it means I do round up.
That means 777 to the nearest 100 is 800.

If the number was slightly different...

- Round 707 to the nearest 100
Because I am rounding the number to the nearest 100, I need to look at the tens column.
There are 0 tens. As this is less than 5, it means do not round up.
That means 707 to the nearest 100 is 700.



Task 2: Round these numbers to the nearest 100.

219	<input type="text"/>	333	<input type="text"/>
342	<input type="text"/>	454	<input type="text"/>
743	<input type="text"/>	9,709	<input type="text"/>
841	<input type="text"/>	5,160	<input type="text"/>
975	<input type="text"/>	1,100	<input type="text"/>

Task 3:

Round the following numbers to the nearest thousand.

4,125	<input type="text"/>	9,441	<input type="text"/>
2,317	<input type="text"/>	25,620	<input type="text"/>
9,552	<input type="text"/>	5,123	<input type="text"/>
51,750	<input type="text"/>	29,998	<input type="text"/>

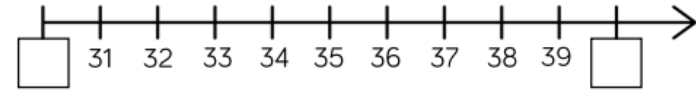
Rounding to the nearest 1000...

- The same rules apply, except now I need to look at the hundreds column.
- There are 6 hundreds, which is more than 5, so the number will round up to 4000.

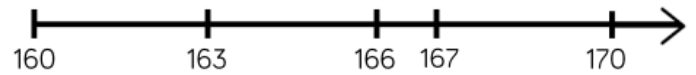


Task 4: Rounding in different ways

Which multiples of 10 do the numbers sit between?



Say whether each number on the number line is closer to 160 or 170?



Round 163, 166 and 167 to the nearest 10

Complete the table:

Start number	Rounded to the nearest 10
851	
XCVIII	

A whole number is rounded to 370

What could the number be?

Write down all the possible answers.

370

Two different two-digit numbers both round to 40 when rounded to the nearest 10

The sum of the two numbers is 79

What could the two numbers be?

Is there more than one possibility?

Whitney says:



847 to the nearest 10
is 840

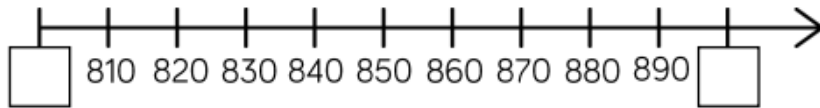
Do you agree with Whitney?

Explain why.

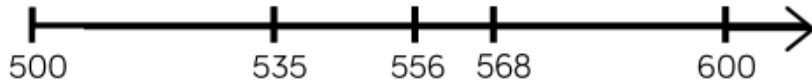
5	Rounding problem solving	Today the children will be given a variety of challenges to test their skills with rounding. You should try as many as you can! They will not fit comfortably on the table, so please look below or on the powerpoint for day 5.	Today you will be given many varying challenges related to rounding. Complete as many as you can!

Day 5 Rounding problems:

Which multiples of 100 do the numbers sit between?



Say whether each number on the number line is closer to 500 or 600.



Round 535, 556 and 568 to the nearest 100

Use the stem sentence: ____ rounded to the nearest 100 is ____.

Complete the table:

Start number	Rounded to the nearest 100
400 → 50 → 7	
994	
XLV	

Always, Sometimes, Never

Explain your reasons for each statement.

- A number with a five in the tens column rounds up to the nearest hundred.
- A number with a five in the ones column rounds up to the nearest hundred.
- A number with a five in the hundreds column rounds up to the nearest hundred.

Using the digit cards 0 to 9, can you make whole numbers that fit the following rules? You can only use each digit once.

1. When rounded to the nearest 10, I round to 20
2. When rounded to the nearest 10, I round to 10
3. When rounded to the nearest 100, I round to 700

0	1	2	3	4
5	6	7	8	9

When a whole number is rounded to the nearest 100, the answer is 200

When the same number is rounded to the nearest 10, the answer is 250

What could the number be?

Is there more than one possibility?

CHALLENGE A

- I am a 3-digit number.
- My tens digit is even, but I am odd.
- If you round me to the nearest 10, I round up.
- I am 400 rounded to the nearest 100.

Who am I?

378	411	463	367
426	391	443	296

CHALLENGE B

- I am a 4-digit number.
- If you round me to the nearest 100, I round down.
- I am 8000 rounded to the nearest 1000.
- My tens digit is a multiple of 3.

Who am I?

7264	7538	7641	8092
8427	8164	7744	865

Car Shopping – round the car prices to the nearest £1000

1. Is £7000 enough to buy the green and yellow cars?
2. Which costs more, three motorbikes or 5 green cars?
3. Can I buy 2 purple cars for £7000?
4. Can I get a red car and a green car for £5000?

