Reasoning and Problem Solving
Place Value Consolidation – Year 4

National Curriculum Objectives

Mathematics Year 4: Count in multiples of 6, 7, 9, 25 and 1000
Mathematics Year 4: Find 1000 more or less than a given number
Mathematics Year 4: Count backwards through zero to include negative numbers
Mathematics Year 4: Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
Mathematics Year 4: Order and compare numbers beyond 1000
Mathematics Year 4: Identify, represent and estimate numbers using different representations
Mathematics Year 4: Round any number to the nearest 10, 100 or 1000
Mathematics Year 4: Solve number and practical problems that involve all of the above and with increasingly large positive numbers
Mathematics Year 4: Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value

About This Resource

This resource is aimed at Year 4 Expected and has been designed to give children the opportunity to consolidate the skills they have learned in Autumn Block 1 Place Value.

The questions are based on a selection of the same 'small steps' that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Negative numbers
Round to the nearest 10
Count in 25s
Roman Numerals to 100
Partitioning
Order numbers
Round to the nearest 100
Count in 1,000s

More Year 4 Place Value resources

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Good day, Professor! As a leading expert in archaeology for the region, you have been contacted by a team who have stumbled upon an extraordinary discovery. The following telegram from an old colleague arrived not long ago:

POSTAL TELEGRAPH	ROYAL POST OFFICE

TELEGRAM

Dear Professor,

Exciting news: amazing discovery! We need your help with our latest archaeological excavation. Please bring extra equipment for the team… and warm socks.
Your colleague, Bartholomew

1. Warm socks? Complete the table below to determine how cold it will get at the site for each day of your stay. You will need a pair of socks for any temperatures colder than 0°C.

Daily High	Temperature expected to drop	Daily Low
14°C	13°C	
12°C	14°C	
15°C	14°C	
11°C	15°C	
10°C	12°C	
11°C	13°C	
9°C	10°C	

How many pairs of socks should you bring?

2. Now for the extra equipment! Round each of the following items on the order form up to the nearest 10 to ensure you have enough for everyone at the site.

| Item	Currently have	Round up
Buckets	58	
Spades	37	
Shovels	49	
Brushes	26	
Picks	65	

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The discovery seems to be inside a large cave. The first thing you need to do is secure the excavation site so nobody wanders off course.

3. Rope comes in coils of 25m. The site has been marked in 25m intervals. What is the perimeter of the site? How many coils of rope will you need?

25m
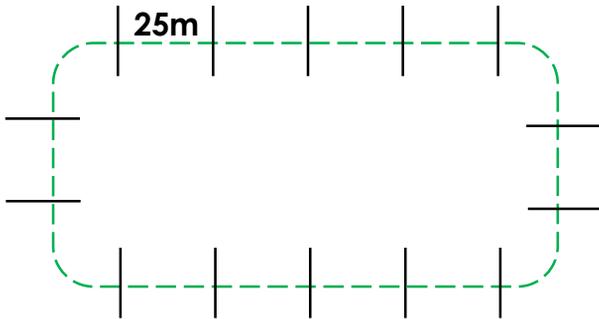
Now that the site is secure, you can finally see what all the fuss is about. Heading into the cave, one of the archaeologists hands you the following piece of paper:

A = L	H = III	P = XXIV
B = I	J = XXIII	Q = XXVI
C = IX	K = VI	R = XIV
D = XX	L = XXII	S = C
E = IV	M = X	T = V
F = XVI	N = XXV	U = XII
G = XL	O = XI	W = XIX
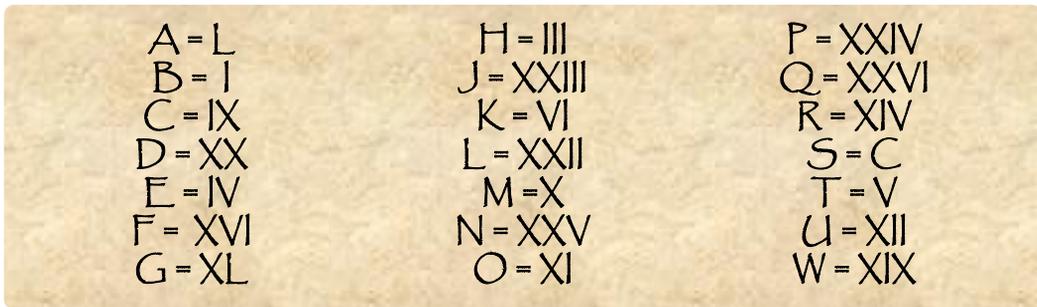
A cipher! Fantastic. A little further, you see that the walls are covered in faint scratches… are those Roman numerals? They look like equations!

4. Solve the equations and see if they have anything to do with the cipher.

XX	+	XX	=	_____
VIII	+	VI	=	_____
XXI	–	XVII	=	_____
XLI	+	IX	=	_____
XXV	–	XX	=	_____
XXIII	–	XIX	=	_____
LXXX	+	XX	=	_____
XX	–	XV	=	_____

Now match the answers with the letters on the cipher to make a word.

Hmmm… what could that mean?

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As you're pondering this massive clue, Bartholomew shouts in the distance, "Professor! Get over here, quick!"

He has unearthed an ancient wooden chest! What could be inside? A large rusty lock sits on the front of the chest. Engraved above the lock is a small plaque that reads 'You will never guess the 4-digit code. The number has 3 thousands and 17 hundreds. The tens and ones digits total 13. Open if you dare!'

5. Get to work figuring out what the possible combinations could be.
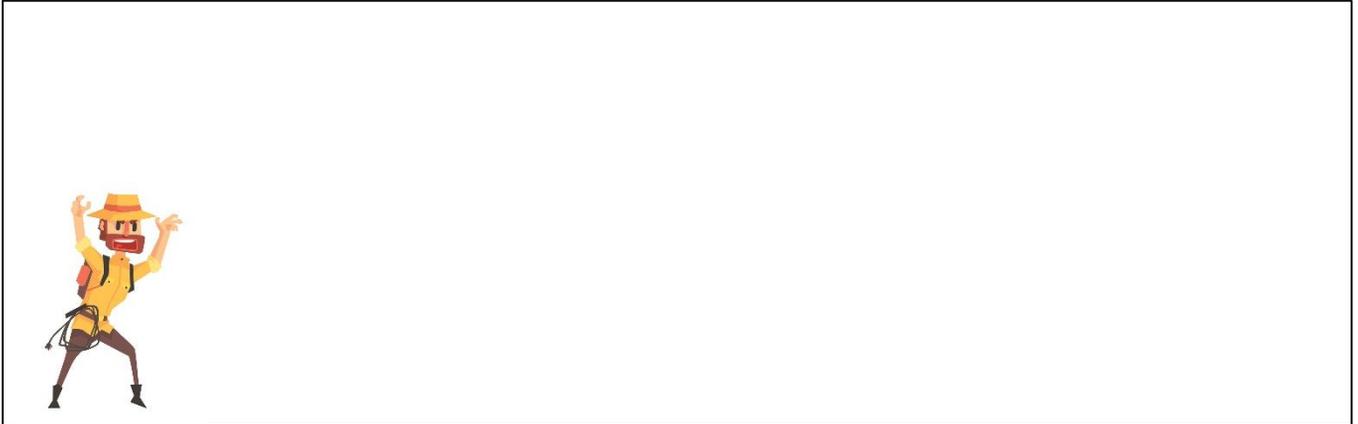
6. Studying the codes, the clue from the cipher pops back into your head. "Greatest… of course – the combination is the greatest number!" you exclaim. Put the codes in order from least to greatest to determine which one will open the chest.
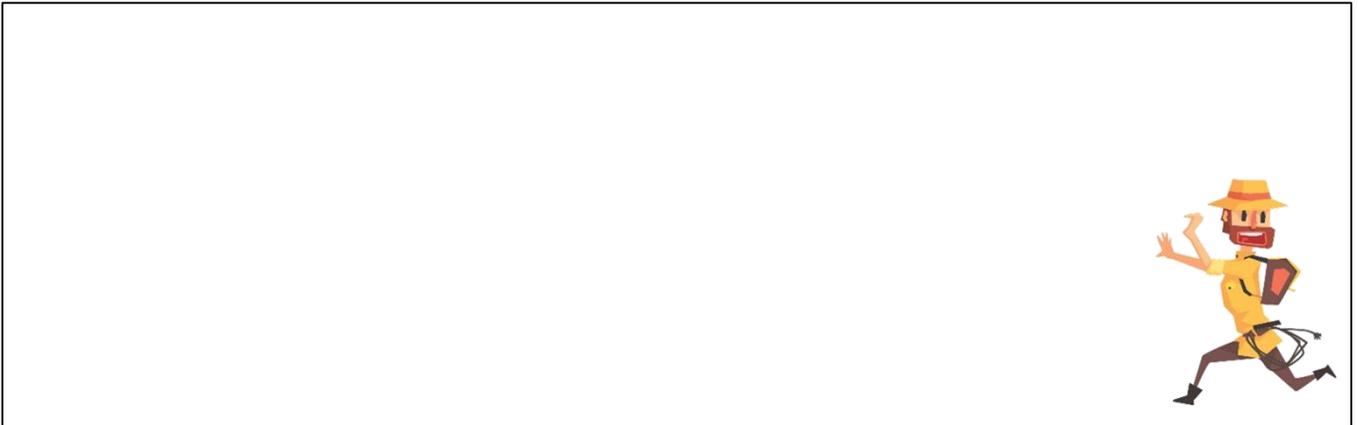
Which code will open the chest? Enter the numbers here:

The lock clicks. With a creak, the lid of the chest slowly opens…

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"My word!" Bartholomew gasps.
"I knew we were right to ask for your help! This must be worth a fortune, Professor!"

The chest is filled to the top with gold coins and rare, valuable jewels: sapphires, emeralds, rubies, diamonds, even Tahitian pearls!

7. Now you must carefully package a sample of the findings and take them back to the lab for inspection. Round each of the following bags of jewels to the nearest 100g to accurately label the boxes for shipping.

Contents	Number of items	Actual weight	Rounded to nearest 100g
Bag 1 – sapphires	5	464g	
Bag 2 – rubies	9	1615g	
Bag 3 – emeralds	7	734g	
Bag 4 – pearls	14	1399g	
Bag 5 – diamonds	6	781g	
Bag 6 – gold coins	12	1989g	

8. A prominent museum wants to buy some of your discovery for a new exhibition in your honour! They have agreed to pay your team £1000 for every sapphire, emerald and diamond you have brought back. They have given you a cheque for £16,000. Is this correct? Why?

Well done, Professor! The team could not have made this discovery without you! Best of luck on your next adventure.

1.

Daily High	Temperature expected to drop	Daily Low
14°C	13°C	1°C
12°C	14°C	-2°C
15°C	14°C	1°C
11°C	15°C	-4°C
10°C	12°C	-2°C
11°C	13°C	-2°C
9°C	10°C	-1°C

The professor will need 5 pairs of socks.

2.

Item	Currently have	Round up
Buckets	58	60
Spades	37	40
Shovels	49	50
Brushes	26	30
Picks	65	70

3. **Perimeter: 350m. 14 coils.**

4.
XX	+	XX	=	XL
VIII	+	VI	=	XIV
XXI	–	XVII	=	IV
XLI	+	IX	=	L
XXV	–	XX	=	V
XXIII	–	XIX	=	IV
LXXX	+	XX	=	C
XX	–	XV	=	V

The cipher clue is GREATEST.

5. **In any order: 4,749, 4,794, 4,758, 4,785, 4,767, 4,776**

6. **4,749, 4,758, 4,767, 4,776, 4,785, 4,794. Code is 4,794**

7.

Contents	Number of items	Actual weight	Rounded to nearest 100g
Bag 1 – sapphires	5	464g	500g
Bag 2 – rubies	9	1615g	1600g
Bag 3 – emeralds	7	734g	700g
Bag 4 – pearls	14	1399g	1400g
Bag 5 – diamonds	8	781g	800g
Bag 6 – gold coins	12	1989g	2000g

8. **It is not correct. There are 5 sapphires, 7 emeralds, and 6 diamonds: 18 jewels in total. 18 lots of £1,000 = £18,000.**