

MULTIPLICATION - DAY 4

Consolidation of multiplication
and problem solving

Below are a range of multiplication problems for you to solve.

TASK 1

Multiplying 4 digit by 1 digit numbers problems

TASK 2

Multiples problems

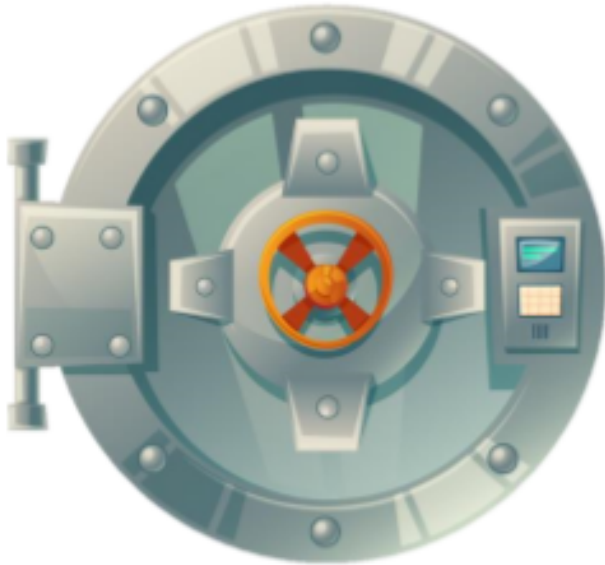
TASK 3

Multiplying 3 digit number by 2 digit number problems

TASK 1

1. Ivan the bank manager has forgotten the code to enter the underground vault at his bank. He remembers that the code was the result of multiplying a 4-digit number by 3.

The 4-digit number Ivan multiplied was made from the digits 0-9 where each digit was only used once. The code was a 4-digit number, and one of the digits was repeated twice within the code.



x				3
<hr/>				

Explore what the 4-digit code could be.

2. Louisa, Alfie and Rehan are playing a game. They are multiplying their 4-digit numbers by 6 to see whose answer is closest to 10,000. They each give clues for their 4-digit numbers.



Louisa

The digit sum of my number is 10. My number has a 0 in the ones column and each digit is different.

All of the digits in my number are even, and one digit is 0. My digit sum is less than Louisa's.



Alfie



Rehan

My number has the highest digit sum. Two of my digits are 0s.

Investigate what each of their numbers could be and who could have won the game.

ANSWERS

1. Ivan the bank manager has forgotten the code to enter the underground vault at his bank. He remembers that the code was the result of multiplying a 4-digit number by 3.

The 4-digit number Ivan multiplied was made from the digits 0-9 where each digit was only used once. The code was a 4-digit number, and one of the digits was repeated twice within the code.



x				3
<hr/>				
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Explore what the 4-digit code could be.

Various answers, for example: $1,248 \times 3 = 3,744$, which could be the code because the digit 4 is repeated twice.

ANSWERS

2. Louisa, Alfie and Rehan are playing a game. They are multiplying their 4-digit numbers by 6 to see whose answer is closest to 10,000. They each give clues for their 4-digit numbers.



Louisa

The digit sum of my number is 10. My number has a 0 in the ones column and each digit is different.

All of the digits in my number are even, and one digit is 0. My digit sum is less than Louisa's.



Alfie



Rehan

My number has the highest digit sum. Two of my digits are 0s.

Investigate what each of their numbers could be and who could have won the game.

Various answers, for example: Louisa could have $1,270 \times 6 = 7,620$; Alfie could have $2,220 \times 6 = 13,121$; Rehan could have $5,600 \times 6 = 33,600$. In this case, Alfie would win.

TASK 2

1. Look at the numbers below.

3 **4** **5**

Which numbers in the grid below are multiples of all the numbers above?

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500

Investigate how your answer might change if 5 was swapped with 6, 7, 8 or 9.

TASK 2

2. Harriet has these digit cards:



Harriet also has the list of numbers below and their lowest common multiples (LCM). She needs to add a digit card to each list so that the lowest common multiples remain unchanged. Investigate which digit cards she could use.

5	3	4		LCM =	60
---	---	---	--	-------	----

6		7	5	LCM =	210
---	---	---	---	-------	-----

	8	5	6	LCM =	120
---	---	---	---	-------	-----

What is the lowest common multiple of the digit cards Harriet does not use?

ANSWERS

1. Look at the numbers below.

3

4

5

Which numbers in the grid below are multiples of all the numbers above?

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
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451	452	453	454	455	456	457	458	459	460
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471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500

Investigate how your answer might change if 5 was swapped with 6, 7, 8 or 9.

Various answers, for example: If 6 was used, 408, 420, 432, 444, 456, 468, 480 and 492 would be circled on the grid.

ANSWERS

2. Harriet has these digit cards:



Harriet also has the list of numbers below and their lowest common multiples (LCM). She needs to add a digit card to each list so that the lowest common multiples remain unchanged. Investigate which digit cards she could use.

Various answers, for example:

5	3	4	6	LCM =	60
---	---	---	---	-------	----

6	3	7	5	LCM =	210
---	---	---	---	-------	-----

4	8	5	6	LCM =	120
---	---	---	---	-------	-----

What is the lowest common multiple of the digit cards Harriet does not use?

The unused digit cards would be 2, 5, 7 and 8. Their lowest common multiple is 280.

TASK 3

1. The school council are organising a disco and want to advertise the event on a banner on the school fence, which has an area of $30,000\text{cm}^2$. The headteacher has told them that they need to leave 75cm free on one side for some road safety posters. They are trying to decide which banner is the largest they can buy. What could the dimensions of the fence be?

Option A

Dimensions: $225\text{cm} \times 45\text{cm}$

Option B

Dimensions: $250\text{cm} \times 55\text{cm}$

Option C

Dimensions: $275\text{cm} \times 65\text{cm}$

Option D

Dimensions: $325\text{cm} \times 75\text{cm}$

Option E

Dimensions: $385\text{cm} \times 85\text{cm}$



Which is the largest banner they can buy? Which other options can they buy?

TASK 3

2. Arrange the digit cards to make a calculation where the answer matches all four statements below.

1	3	4	2	6	8
			x		

The calculation equals a 5-digit number.

One of the digits in the answer is 0.

The digit total of the answer is less than 19.

The answer is divisible by 4.

ANSWERS

1. The school council are organising a disco and want to advertise the event on a banner on the school fence, which has an area of $30,000\text{cm}^2$. The headteacher has told them that they need to leave 75cm free on one side for some road safety posters. They are trying to decide which banner is the largest they can buy. What could the dimensions of the fence be?

**Various answers, for example: 300cm x 100cm;
400cm x 75cm; 500cm x 60cm**

Option A

Dimensions: 225cm x 45cm

Option B

Dimensions: 250cm x 55cm

Option C

Dimensions: 275cm x 65cm

Option D

Dimensions: 325cm x 75cm

Option E

Dimensions: 385cm x 85cm



Which is the largest banner they can buy? Which other options can they buy?

Various answers, for example:

If fence is 300cm x 100cm, option A is the only one that will fit. If fence is 400cm x 75cm, options A, B, C and D will fit (D is the largest). If fence is 500cm x 60cm, options A and B will fit (B is the largest). If fence is 600 x 50cm, only option A will fit.

ANSWERS

2. Arrange the digit cards to make a calculation where the answer matches all four statements below.

$$\begin{array}{r} 1 \quad 3 \quad 4 \quad 2 \quad 6 \quad 8 \\ 418 \times 36 \end{array}$$

The calculation equals a 5-digit number.

The digit total of the answer is less than 19.

One of the digits in the answer is 0.

The answer is divisible by 4.

Various possible answers, for example: $418 \times 36 = 15,048$.