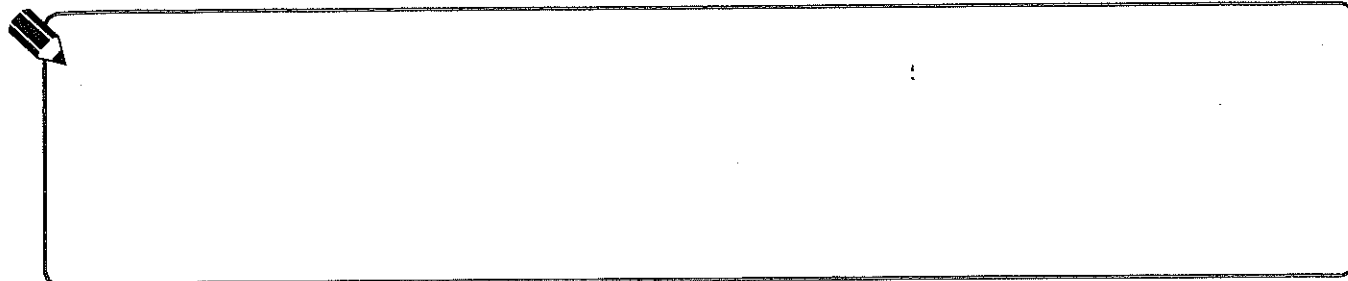


Recognising prime numbers up to 100

- 1 Draw an array to prove that 49 is not a prime number.

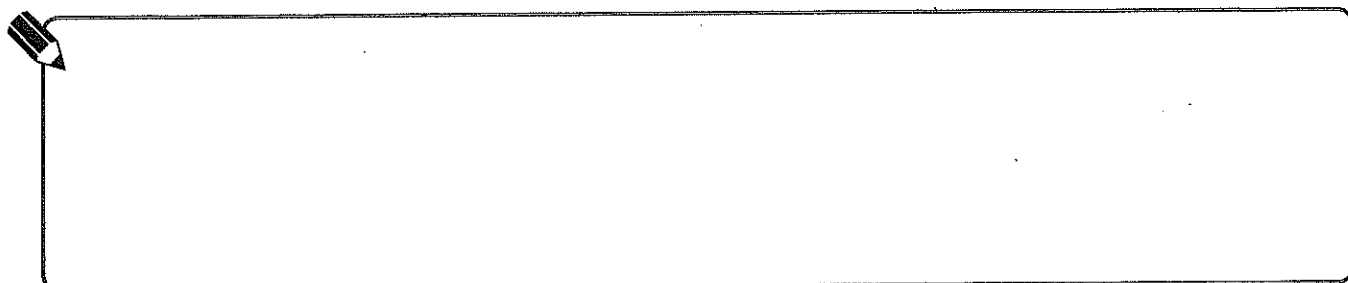


This proves that 49 is not prime because it shows that

$$49 \div \boxed{} = \boxed{}.$$

So, factors of 49 are $\boxed{}$, $\boxed{}$ and $\boxed{}$.

- 2 Check whether 51, 53 and 55 are prime numbers.



I know $\boxed{}$ is not a prime number because _____

I know $\boxed{}$ is not a prime number because _____

$\boxed{}$ is a prime number because _____

- 3 Complete this 100 square by circling all the prime numbers from 20 to 100.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- 4 Write two numbers in each section of the table.

	Factor of 100	Not a factor of 100
Prime number		
Not a prime number		

Which section can have no more numbers in it?



5 '23 is a prime number, so 123 and 223 must be prime numbers too.'

Do you agree?

Explain or show your reasoning.



Reflect

Explain how to show whether 85 and 89 are prime numbers.

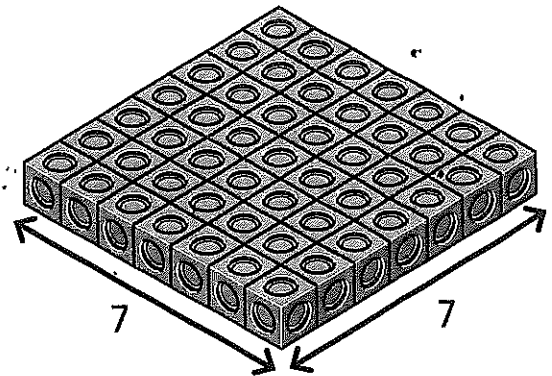
Squares and cubes

1 Circle the correct answer for each question.

a) 7^2 is equal to:

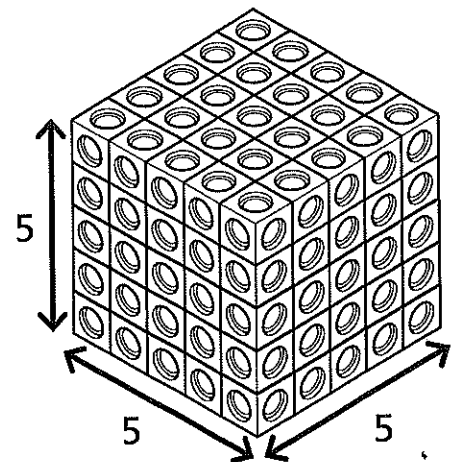
72 14 49 9

$7 \times 7 =$



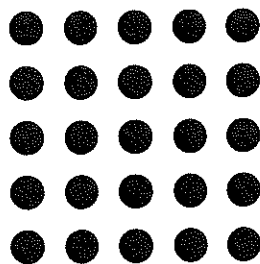
b) 5^3 is equal to:

53 125 15 25

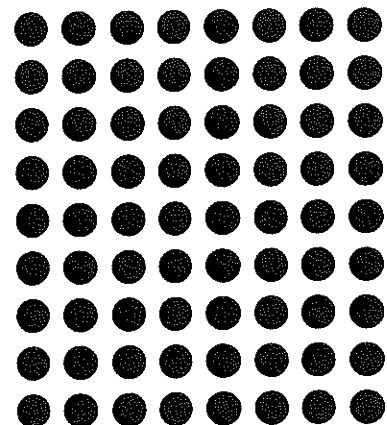


2 Add to these arrays so that they represent the written numbers.

a) 6^2



b) 10^2



3 Write in the missing numbers.

a) $9^2 = \square$

d) $\square^2 = 64$

g) $\square^2 = 1$

b) $10^2 = \square$

e) $16 = \square^2$

h) $\square = 1^3$

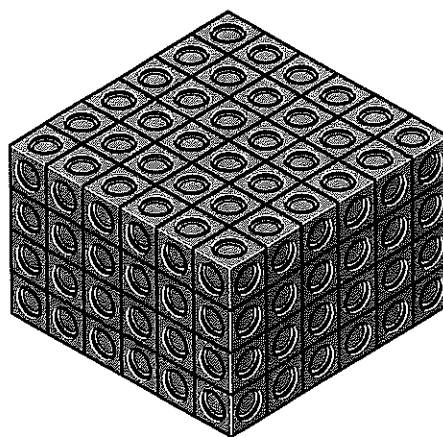
c) $11^2 = \square$

f) $64 = \square^3$

i) $100 = 10 \square$

4 How many more cubes need to be added so that this represents $6 \times 6 \times 6$?

Explain your answer.



more cubes need to be added, because _____

5 Is Bella correct? Explain.



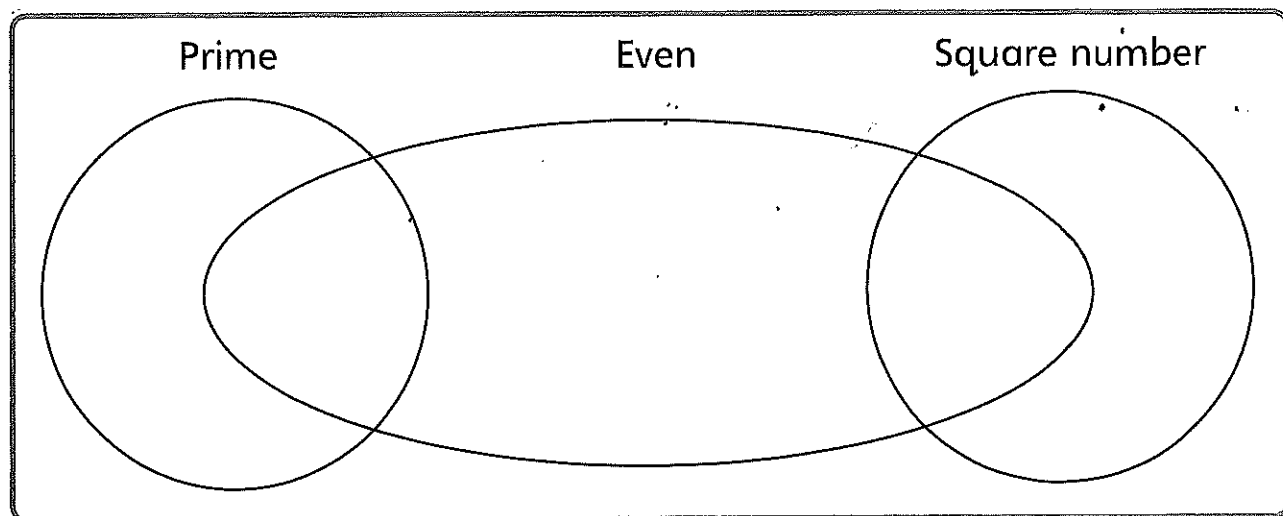
I know $3^2 = 9$, so I think that $30^2 = 90$.





- 6 Write these numbers in the correct places on the sorting diagram.

4, 13, 2, 14, 64, 81, 100, 9, 91, 16



Explain why the 'prime' and 'square number' circles do not need to overlap.

Reflect

Find and correct the errors in Danny's work.

$$1^2 = 2 \quad 3 = 9^2 \quad 5^3 = 15$$

Write a comment to help him understand the mistakes he has made.

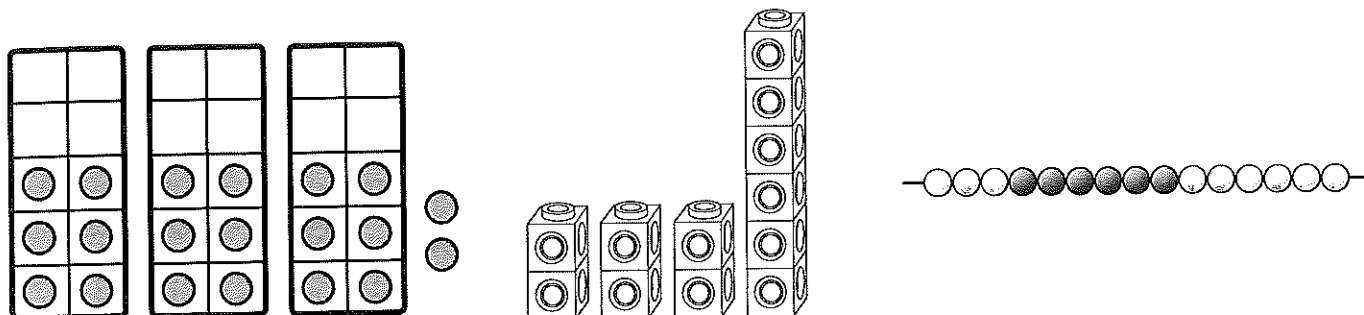
Order of operations

- 1 Draw lines to match each calculation to the equipment that represents it correctly.

$$3 \times 2 + 6$$

$$3 + 2 \times 6$$

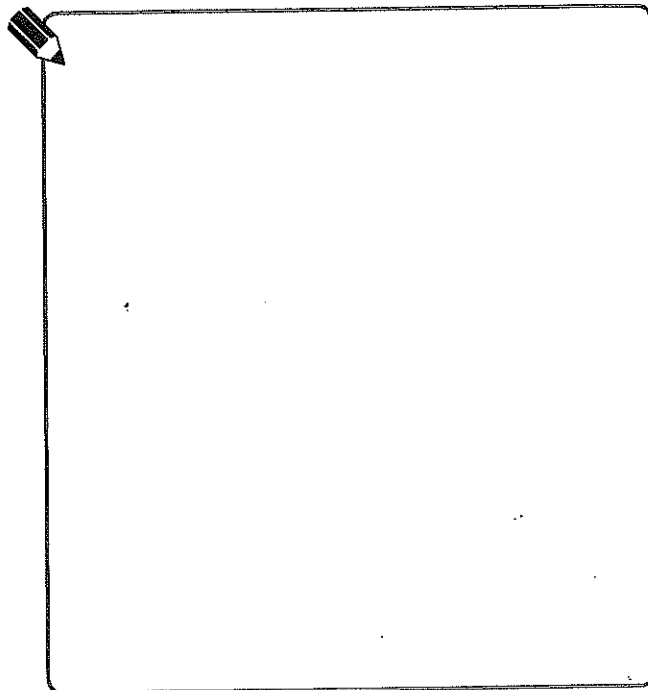
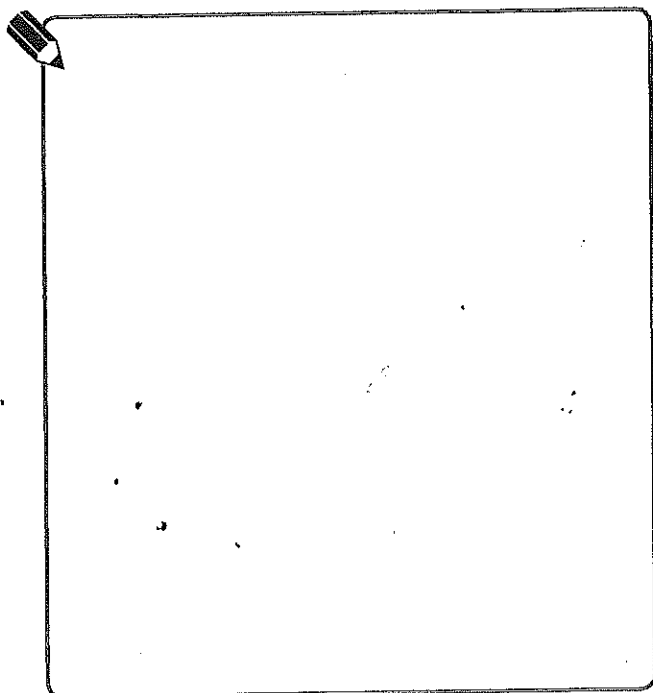
$$3 \times 6 + 2$$



- 2 Draw counters that represent the correct way to solve these calculations.

a) $5 + 1 \times 5$

b) $5 \times 2 - 5$



- 3** Find the solution to these calculations. The first one has been started for you.

a) $\boxed{3 \times 12} - 3$

$\downarrow$ $\downarrow$
 $\boxed{} - 3 = \boxed{}$

d) $100 \times 8 - 8$

b) $20 + 20 \times 7$

e) $5 \times 10 - 5$

c) $10 - 2 \times 4$

f) $64 - 7 \times 8$

- 4** Find the solution to these pairs of calculations.

a) $30 + 30 \div 5 = \boxed{}$ $30 \times 30 \div 5 = \boxed{}$

b) $40 + 40 \div 5 = \boxed{}$ $40 \times 40 \div 5 = \boxed{}$

c) $50 + 50 \div 5 = \boxed{}$ $50 \div 50 \times 5 = \boxed{}$

d) $100 + 100 \div 5 = \boxed{}$ $100 \div 100 \times 5 = \boxed{}$



- 5 a) Write in the missing numbers.

$$\boxed{} + 10 \times 5 = 100$$

$$100 = 10 + \boxed{} \times 5$$

$$100 - \boxed{} \div 5 = 0$$

- b) Write four different solutions to this calculation.

$$100 - \boxed{} \div \boxed{} + 100 = 199$$

$$100 - \boxed{} \div \boxed{} + 100 = 199$$

$$100 - \boxed{} \div \boxed{} + 100 = 199$$

$$100 - \boxed{} \div \boxed{} + 100 = 199$$

Explain what you notice about the pairs of missing numbers.

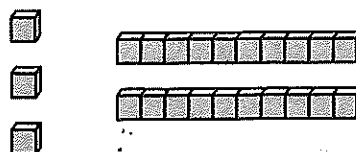
Reflect

Write your own calculation that could have one wrong answer and one correct answer. Then show the order needed to complete it correctly.

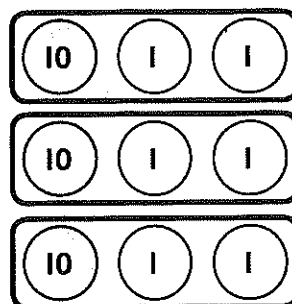
Brackets

1 Match each calculation to the correct representation.

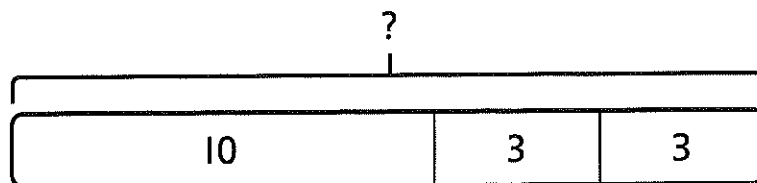
$10 + (2 \times 3)$



$(10 + 2) \times 3$



$3 + (2 \times 10)$



2 Complete each calculation.

a) $(14 + 11) \times 4 = \boxed{}$

c) $3 \times (50 - 25) = \boxed{}$

$\boxed{} \bigcirc \boxed{} = \boxed{}$

b) $(100 - 1) \div 11 = \boxed{}$

d) $100 = (\boxed{} + 17) \times 5$

3 A4 paper costs £3 per pack. A3 paper costs £5 per pack.

a) Mr Lopez needs to buy 12 packs of A4 paper and 12 packs of A3 paper.

Circle the calculation that finds the total cost.

$12 \times (5 \times 3)$

$(12 \times 5) + (3 \times 5)$

$5 + (3 \times 12)$

$12 \times (3 + 5)$

b) Toshi needs 15 packs of each size of paper.

Add brackets so that this calculation finds the correct cost.

$3 + 5 \times 15 = \boxed{}$

c) Miss Hall buys 5 packs of A4 and 3 packs of A3.

Write a number sentence for the cost of what she bought.

4 Write the correct sign $>$, $<$ or $=$ in each of the following calculations.

a) $(11 + 6) - 9$ $\bigcirc$ $(11 + 6) - 5$

b) $5 \times (12 + 5)$ $\bigcirc$ $(5 \times 12) + 5$

c) $(14 \times 4) \div 2$ $\bigcirc$ $14 \times (4 \div 2)$

5 Add brackets and operations to make these calculations correct.

a) $2 \bigcirc 2 \bigcirc 2 \bigcirc 2 = 12$

b) $10 = 3 \bigcirc 3 \bigcirc 3 \bigcirc 3$

- 6 a) What different results can you make by inserting operations and brackets into this table? Create three different calculations for each column.

Greater than 100	Between 0 and 1, including 0 and 1	Less than 0
$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$	$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$	$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$
$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$	$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$	$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$
$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$	$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$	$10 \bigcirc 10 \bigcirc 10 \bigcirc 10$ $= \boxed{}$

- b) What are the largest and the smallest results you can find?

Largest

Smallest

Reflect

Add brackets to make this calculation correct.

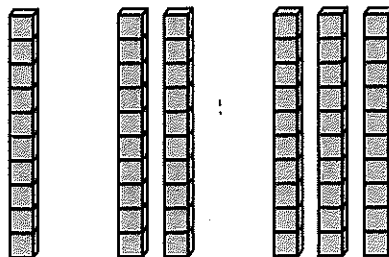
$$10 \times 3 + 4 > 10 \times 4 + 3$$

Explain how you know you have correctly placed the brackets.

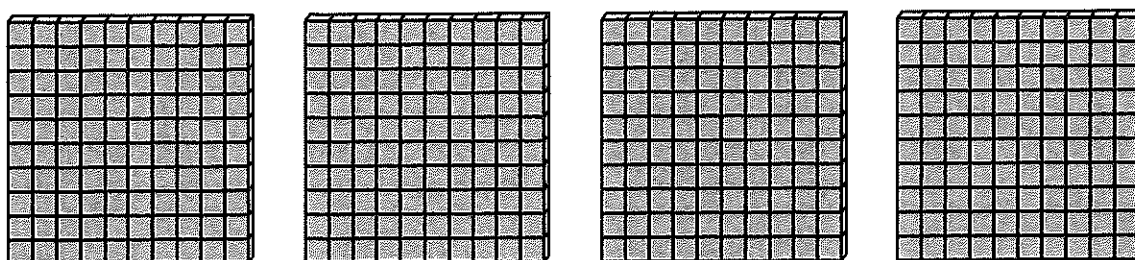
Mental calculations 1

1 Solve these calculations using mental methods.

a) $9 + 19 + 29 =$

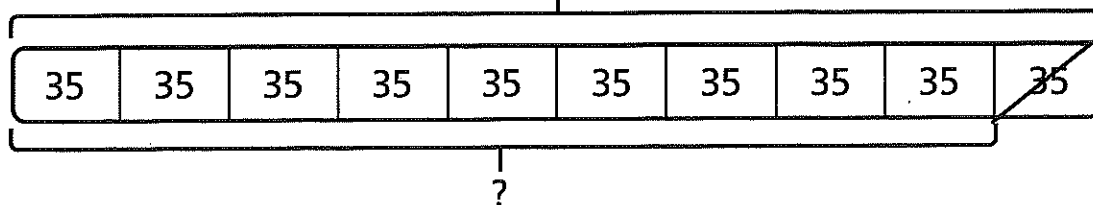


b) $4 \times 99 =$



c) $35 \times 9 =$

$10 \times 35 =$



2 a) Kate spends $\pounds 4.99 + \pounds 2.99 + \pounds 1.99$.

How much change does she receive from a $\pounds 10$ note?

Kate receives change.

b) Ebo buys 5 bottles of water for 95p each. He pays with a $\pounds 20$ note.

What is the total cost? How much change does he receive?

Ebo spends in total. He receives change.

- 3 Solve these calculations. Use mental methods and jottings to support your thinking.

a) $\square = 50 \times 7 - 150$



b) $50 + 8 \times 25 = \square$



c) $(75 \times 3) + (25 \times 3) = \square$



d) $(75 \div 3) \times 9 = \square$

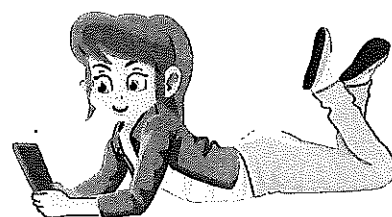


- 4 Sofia has 6 lengths of wood that are each 98 cm long. She has mentally calculated that she has 5 m and 94 cm of wood in total.



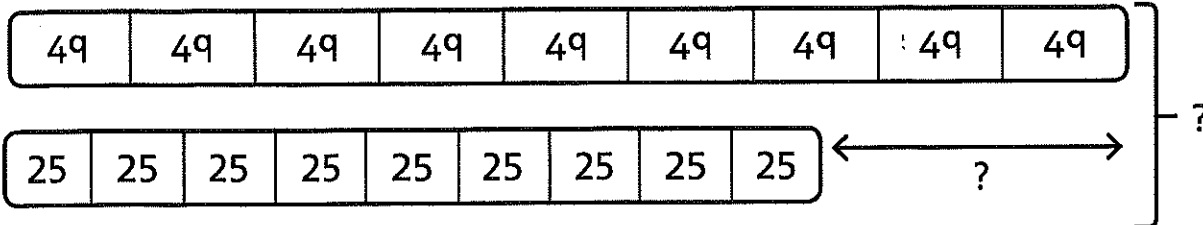
Explain why Sofia is incorrect and the mistake she has made.

I think she first worked out 6×100 .



CHALLENGE

- 5 Draw diagrams explaining different mental methods for working out the two missing numbers.

**Reflect**

Suggest three things to look out for when deciding whether to calculate mentally.