1.1 Mental strategies

Make easy numbers

Numbers that are added or multiplied can be rearranged to make the calculations easier.

$(8) + 5 + (2)$ $\quad$ $(4) \times 3 \times (5)$

$= \mathbf{10} + 5$ $\quad$ $= \mathbf{20} \times 3$

$= 15$ $\quad$ $= 60$

Look for numbers that add or multiply to give multiples of 10. The result of a multiplication is called a **product**.

Split to multiply

A large number can be split into 10s and 1s when it is multiplied by a smaller number. Multiply the 10s and 1s separately, then add the products together.

4×13

$= 4 \times \mathbf{10} + 4 \times \mathbf{3}$

$= 40 + 12$

$= 52$

Multiply by rounding up

Round a large number up to the nearest 10 to make multiplying easier. 'Extra lots' are then subtracted.

6×38

$= 6 \times (40 - 2)$

$= 6 \times 40 - 6 \times 2$

$= 240 - 12$

$= 228$

1 Circle the two numbers that will add to a multiple of 10.

e.g. $(12) + 7 + (8)$ $\quad (12 + 8 = 20)$

a $5 + 6 + 4$ $\quad$ **b** $3 + 8 + 17$

c $28 + 12 + 16$ $\quad$ **d** $19 + 33 + 12 + 21$

2 Find the sum by first adding the two numbers that give a multiple of 10.

a $7 + 9 + 3$

$= \underline{10} + \_\_\_$

$= \square$

b $18 + 21 + 9$

$= \_\_\_ + \_\_\_$

$= \square$

c $34 + 15 + 6$

$= \_\_\_ + \_\_\_$

$= \square$

d $26 + 11 + 29$

$= \_\_\_ + \_\_\_$

$= \square$

3 Find the total by rounding one number up or down, and then adjusting the other accordingly.

e.g. $23 + 45$

$-3 \downarrow \quad \downarrow +3$

$= 20 + 48$

$= 68$

a $41 + 18$

$-1 \downarrow \quad \downarrow +1$

$= \underline{40} + \_\_\_$

$= \square$

b $34 + 27$

$= \underline{40} + \_\_\_$

$= \square$

c $96 + 35$

$= \_\_\_ + \_\_\_$

$= \square$

d $58 + 64$

$= \_\_\_ + \_\_\_$

$= \square$

4 Circle the two numbers that multiply to give a multiple of 10.

a $2 \times 7 \times 5$ $\quad$ **b** $3 \times 5 \times 6$

c $12 \times 5 \times 3$ $\quad$ **d** $8 \times 7 \times 5$

5 Find the product by first multiplying the two numbers you circled in Question 4.

Tip Remember, when multiplying by multiples of 10, ignore the 0s, multiply the other numbers and then attach the 0s.

a $(2) \times 7 \times (5)$

$= \underline{10} \times \underline{7}$

$= \square$

b $3 \times 5 \times 6$

$= \_\_\_ \times \_\_\_$

$= \square$

c $12 \times 5 \times 3$

$= \_\_\_ \times \_\_\_$

$=$ ☐

d $8 \times 7 \times 5$

$= \_\_\_ \times \_\_\_$

$=$ ☐

6 Split the larger number into 10s and 1s, multiply, then add the products.

e.g. 3×24

$= 3 \times \mathbf{20} + 3 \times \mathbf{4}$

$= 60 + 12$

$= 72$

a 5×16

$= 5 \times \_\_ + 5 \times \_\_$

$= \_\_\_\_ + \_\_\_\_$

$=$ ☐

b 6×13

$= 6 \times \_\_ + 6 \times \_\_$

$= \_\_\_\_ + \_\_\_\_$

$=$ ☐

7 Round the following numbers to the nearest 10, stating the rounding difference.

e.g. 36 rounds up to 40

-4

a 29 rounds up to ☐

☐

b 53 rounds down to ☐

☐

c 98 rounds up to ☐

☐

8 Find the product of the numbers below by first rounding to the nearest 10, multiplying, and then subtracting the 'extra lots'.

e.g. 4×17

$= 4 \times (20 - 3)$

$= 4 \times \mathbf{20} - 4 \times \mathbf{3}$

$= 80 - 12$

$= 68$

a 3×19

$= 3 \times (20 - \_\_\_\_)$

$= 3 \times \_\_ - 3 \times \_\_$

$= \_\_\_\_ - \_\_\_\_$

$=$ ☐

b 5×26

$= 5 \times (\_\_\_\_ - \_\_\_\_)$

$= 5 \times \_\_ - 5 \times \_\_$

$= \_\_\_\_ - \_\_\_\_$

$=$ ☐

NAPLAN-ready

Shade the box beneath the correct answer.

5×34 is the same as

$150 + 20$ ☐	$15 + 20$ ☐
$53 + 54$ ☐	$5 \times 30 + 4$ ☐

Tip Split the larger number to be multiplied into 10s and 1s.

1.2 Indices A

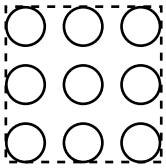
Square numbers

When a number is multiplied by itself, the result is a square number.

$3 \times 3 = \mathbf{9}$

9 is a square number.

Square numbers can be arranged to form a square.



They can be written in **expanded form** and **index form**.

$9 = 3 \times 3$ ← expanded form

$= 3^2$ ← index form

This is said as 'three squared'.

Cube numbers

When a number is multiplied by itself and then multiplied by itself again, the result is a cube number.

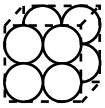
$2 \times 2 \times 2 = \mathbf{8}$
$3 \times 3 \times 3 = \mathbf{27}$
$4 \times 4 \times 4 = \mathbf{64}$
} cube numbers

Cube numbers can be written using indices.

$2 \times 2 \times 2 = 2^3$

This is said as 'two cubed'.

They can be arranged to form a cube.



Square roots

To find the **square root** of a number, work out the number that when multiplied by itself will give the number under the square root sign.

$\sqrt{9}$

$\square \times \square = 9$

$\sqrt{9} = 3$ because $3 \times 3 = 9$

To find the **cube root** of a number find the number that when multiplied by itself twice will give the number under the cube root sign.

$\sqrt[3]{64}$

$\square \times \square \times \square = 64$

$\sqrt[3]{64} = 4$
because $4 \times 4 \times 4 = 64$

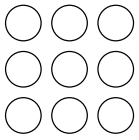
1 **a** Write the first 10 square numbers by filling in the empty boxes in the multiplication chart.

×	1	2	3	4	5	6	7	8	9	10
1		2	3	4	5	6	7	8	9	10
2	2		6	8	10	12	14	16	18	20
3	3	6		12	15	18	21	24	27	30
4	4	8	12		20	24	28	32	36	40
5	5	10	15	20		30	35	40	45	50
6	6	12	18	24	30		42	48	54	60
7	7	14	21	28	35	42		56	63	70
8	8	16	24	32	40	48	56		72	80
9	9	18	27	36	45	54	63	72		90
10	10	20	30	40	50	60	70	80	90	

b What are the next two square numbers?

☐ and ☐

c The number 9 is a square number as it can be arranged in the shape of a square.



Draw a diagram to show why the number 25 is a square number.

2 Write the following square numbers in expanded form and in index form.

e.g. 100
$= 10 \times 10$ ← expanded form
$= 10^2$ ← index form

a 25
$= \_\_ \times \_\_$
$= \square^2$

b 49
$= \_\_ \times \_\_$
$= \square$

c 81

$= \_\_\_ \times \_\_\_$

$=$ ☐

d 121

$= \_\_\_ \times \_\_\_$

$=$ ☐

3 Answer the following.

Tip Calculate the square numbers first and then use strategies from Exercise 1.1 to complete the calculation.

a $2^2 + 6^2$

$= \_\_\_ + \_\_\_\_$

$=$ ☐

b $3^2 + 4^2 + 1^2$

$= \_\_\_ + \_\_\_\_ + \_\_\_$

$=$ ☐

c $3^2 \times 5^2$

$= \_\_\_ \times \_\_\_\_$

$= (\_\_\_ \times 20) + (\_\_\_ \times 5)$

$= \_\_\_\_ + \_\_\_\_$

$=$ ☐

d $2^2 \times 7^2$

$= \_\_\_\_ \times \_\_\_\_$

$= \_\_\_\_ \times (50 - \_\_\_)$

$= (\_\_\_\_ \times \_\_\_\_) - (\_\_\_\_ \times \_\_\_\_)$

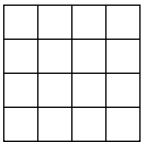
$= \_\_\_\_ - \_\_\_\_$

$=$ ☐

4 Complete the following.

Tip Square numbers can be arranged as a square. The square root of a number is the side length of the square.

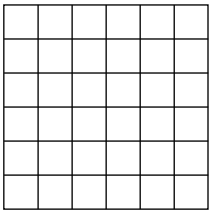
a



$4 \times 4 = 16$

Therefore, $\sqrt{16}$ = ☐

b



$6 \times 6 = \_\_\_$

$\sqrt{36}$ = ☐

c

$\_\_\_ \times \_\_\_ = 4$

$\sqrt{4}$ = ☐

5 Write the first 5 cube numbers.

a 1^3

$= 1 \times 1 \times 1$

$=$ ☐

b 2^3

$= 2 \times 2 \times 2$

$=$ ☐

c $\_\_\_$

$= 3 \times 3 \times 3$

$=$ ☐

d 4^3

$= \_\_\_ \times \_\_\_ \times \_\_\_$

$=$ ☐

e $\_\_\_$

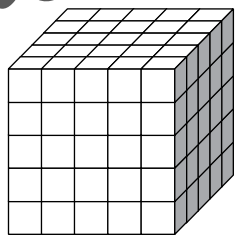
$= \_\_\_ \times \_\_\_ \times \_\_\_$

$=$ ☐

6 Use the diagrams below to find the cube root of the numbers represented.

Tip The cube root of a number is the side length (i.e. the length, width and height) of a cube.

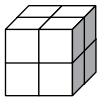
a



$\_\_\_ \times \_\_\_ \times \_\_\_ = 125$

Therefore, $\sqrt[3]{125}$ = ☐

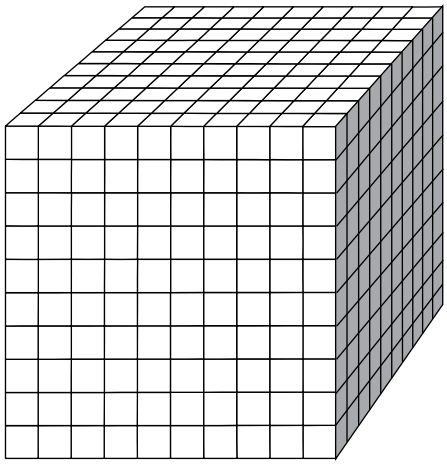
b



$2 \times 2 \times 2 = \_\_\_$

Therefore, $\sqrt[3]{\_\_\_} = 2$

c



$\_\_\_\_ \times \_\_\_\_ \times \_\_\_\_ = 1000$

Therefore, $\sqrt[3]{\_\_\_\_}$ = ☐

1.2 Indices B

Powers

If a number is multiplied by itself repeatedly, it can be written in index form.

index (or **power**)

$2^4 = 2 \times 2 \times 2 \times 2 = 16$

base

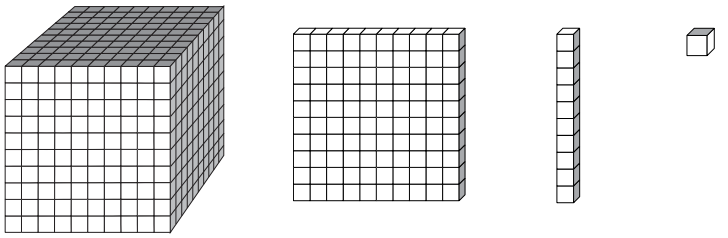
expanded form

The word 'power' can be used instead of index. The plural of index is **indices**.

Powers of 10

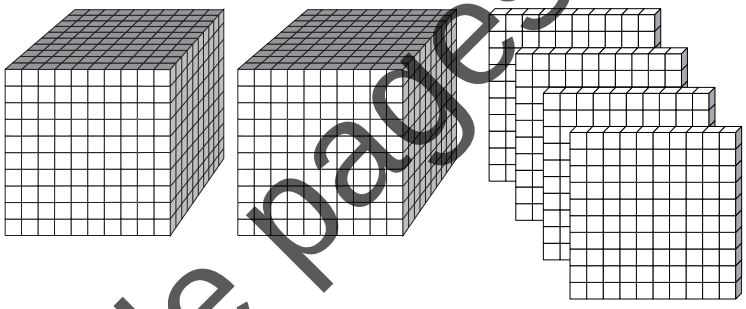
Our **place value** system is based on the number 10. MAB blocks can be used to represent numbers.

Thousands	Hundreds	Tens	Ones
10^3	10^2	10^1	10^0



The place value of each digit in a number can be written with powers of 10.

- $2 \times 10^3 = 2000$
- $4 \times 10^2 = 400$



Word Bank

Index form

➜ Index form is a short way of writing a number using powers.

$6 \times 6 \times 6 = 6^3$

Expanded form

➜ A number written in index form can be expanded in the following way.

$5^4 = 5 \times 5 \times 5 \times 5$

Place value

➜ The value of a digit depends on where it is placed within a number.

3419

The 4 stands for 400 (or 4×10^2)

1 Write the following expressions using powers.

a $4 \times 4 \times 4$

$= 4^{\square}$

b 8×8

$= \square$

c $3 \times 3 \times 3 \times 3 \times 3$

$= \square$

d $9 \times 9 \times 9 \times 9$

$= \square$

2 Find the value of the following.

Tip To get the next number in the sequence, multiply the previous number by 2.

a $2^1 = 2$

$2^2 = \_\_ \times \_\_ = \square$

$2^3 = \_\_ \times \_\_ \times \_\_ = \square$

$2^4 = \_\_ \times \_\_ \times \_\_ \times \_\_ = \square$

$2^5 = \_\_ \times \_\_ \times \_\_ \times \_\_ \times \_\_ = \square$

b Find the value of 2^{10} using a calculator.

2	$x^{\square}$	1	0	=

$2^{10} =$ ☐

3 Find the value of the following numbers in index form by writing each in expanded form first.

a 2^6

= ___ × ___ × ___ × ___ × ___ × ___

= ☐

b 3^4

= ☐

= ☐

c 1^7

= ☐

= ☐

d 8^3

= ☐

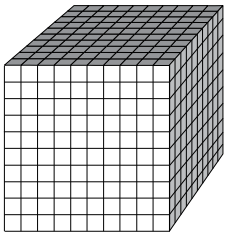
= ☐

4 Arrange the numbers in Question **3** in index form in ascending order (smallest to largest).

☐, ☐, ☐, ☐

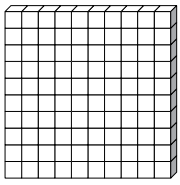
5 Write the value of each MAB block as a power of 10.

a



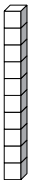
$1000 = 10^{\square}$

b



$\_\_\_\_ = 10^{\square}$

c

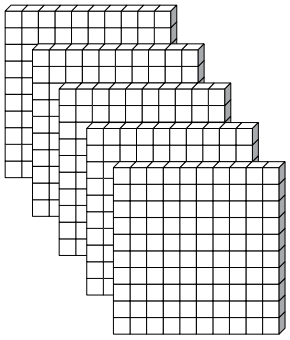


$\_\_\_ = 10^{\square}$

d $1 = 10^{\square}$

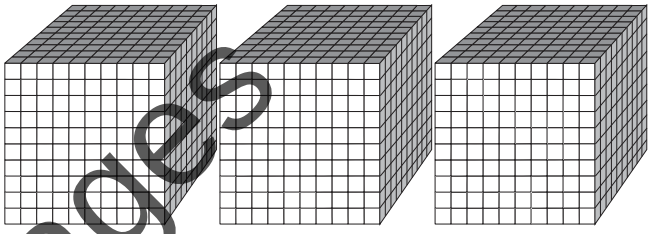
6 Write the value of each set of MAB blocks.

a



$\_\_\_ \times 10^{\square} = \_\_\_\_\_$

b



$\_\_\_ \times 10^{\square} = \_\_\_\_\_$

7 For the numbers below, write in the power of 10.

Tip Look for a pattern—between the power and the number of zeroes!

a $800 = 8 \times 10^{\square}$

b $6000 = 6 \times 10^{\square}$

c $40 = 4 \times 10^{\square}$

d $30\,000 = 3 \times 10^{\square}$

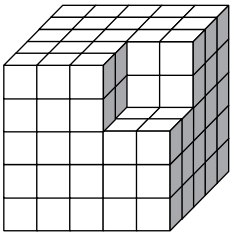
e $100\,000 = 1 \times 10^{\square}$

f $900\,000 = 9 \times 10^{\square}$

NAPLAN-ready

Shade the box beneath the correct answer.

How many small cubes are in this figure?



61 ☐	63 ☐
117 ☐	121 ☐

Tip The shape is almost a cube. Use your knowledge of cube numbers.

1.3 More strategies for multiplication and division

Multiply and divide by working in stages

A large multiplication can be completed by breaking it into simpler multiplications.

22×6
$= 22 \times 3 \times 2$
$= 66 \times 2$
$= 132$

Divisions can be calculated in the same way.

$140 \div 4$
$= 140 \div 2 \div 2$ ← ÷ 2 is to halve a number
$= 70 \div 2$
$= 35$

Multiplying using an array

Multiplying two numbers that have two or three digits can be done by using an array (a grid).

Multiply the two numbers along the side of the array and write the answer inside each box. Add each row, then add the numbers at the end of each row to find the product.

e.g. 24×13

	10	3	
20	200 +	60	= 260
4	40 +	12	= 52
			312

Multiplying and dividing by multiples of 10

- To multiply numbers with zeroes on the end:

300×50 → count the zeroes
3×5
$= 15\,000$

- To divide, cancel by crossing out the *same* number of zeroes from both numbers.

$1500 \div 300$ → cancel zeroes (divide by 100)
$= 15 \div 3$
$= 5$

Word Bank

Product

➜ The product is the result of multiplying two or more numbers.

$5 \times 6 = \mathbf{30}$ ← product

Quotient

➜ The quotient is the result of dividing one number by another.

$24 \div 8 = \mathbf{3}$ ← quotient

1 Break the numbers down into simple multiplications.

a 4
$= 2 \times \_\_$

b 9
$= \_\_ \times \_\_$

c 12
$= 2 \times 6$
$= 2 \times \_\_ \times \_\_$

d 20
$= \_\_ \times \_\_$
$= \_\_ \times \_\_ \times \_\_$

2 Calculate the **product** by first breaking the second number down into simpler multiplications.

Tip Breaking down the number to be multiplied into smaller numbers is called the 'working in stages' strategy.

e.g. 18×4
$= 18 \times 2 \times 2$
$= 36 \times 2$
$= 72$

a 15×9
$= 15 \times \_\_ \times \_\_$
$= \_\_ \times \_\_$
$=$

b 21×6
$= \_\_ \times \_\_ \times \_\_$
$= \_\_ \times \_\_$
$=$

3 Calculate the **quotient** by breaking the second number into simpler divisions.

$45 \div 9 = 5$
↑
divisor

a $60 \div 4$

$= 60 \div \_\_\_ \div \_\_\_$

$= \_\_\_ \div \_\_\_$

$=$ ☐

b $90 \div 15$

$= \_\_\_ \div 3 \div \_\_\_$

$= \_\_\_ \div \_\_\_$

$=$ ☐

4 Complete the arrays to calculate the products.

a 25×12

	10	2	
20	200 +	40	= ☐
5	+		= 60
			☐

b 14×31

	_0	☐	
10	+		= 310
4	120 +		= ☐
			☐

5 Find the product.

a 20×700

$=$ ___ 000

b 50×50

$=$ ☐

c 800×400

$=$ ☐

d $30\,000 \times 120$

$=$ ☐

6 Calculate the quotients.

Tip The same number of zeroes must be cancelled from both numbers.

a $120 \div 40$

$= 12 \div 4$

$=$ ☐

b $90 \div 30$

$= \_\_\_ \div \_\_\_$

$=$ ☐

c $200 \div 50$

$= \_\_\_ \div \_\_\_$

$=$ ☐

d $4000 \div 800$

$= \_\_\_ \div \_\_\_$

$=$ ☐

7 Use a combination of strategies to calculate the products.

Tip Strategies for multiplying:
- Break one number into **factors**.
- Multiply using an array.
- Count the zeroes when multiplying by multiples of 10.

a 1100×150

First, work out 11×15.

11×15

$= 11 \times \_\_\_ \times \_\_\_$

$= \_\_\_\_\_ \times \_\_\_$

$= \_\_\_\_\_$

Now, write in the zeroes. _____ 000

b 1300×220

First, work out 13×22.

	20	2	
10			=
3			= ☐
			☐

Now, write in the zeroes. ☐

NAPLAN-ready

Shade the box beneath the correct answer.

An employer divided a Christmas bonus of $240 000 between 80 staff members. How much money did each employee receive as a Christmas bonus?

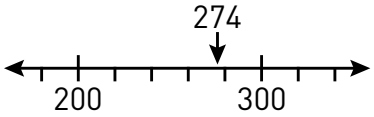
$30	$300	$3000	$30 000
☐	☐	☐	☐

Tip When dividing by multiples of 10, the question can be simplified by cancelling the same number of zeroes from each number.

1.4 Estimating and rounding

Rounding a number to the first digit

The number 274 is closer to 300 than to 200 on a number line.



274 ≈ 300

≈ means 'is approximately equal to'.

To round to the first digit, look at the second digit. If it is:

→ 0–4 round down

→ 5–9 round up.

5 (3) 4 → round down → 5 0 0

2 (6) 1 9 → round up → 3000

Estimating the answer to multiplications and divisions

Here are two ways of estimating the answer to × and ÷ questions:

- Round numbers to the first digit.

  37×220
  $\approx \mathbf{4}0 \times \mathbf{2}00$
  ≈ 8000

- Round numbers to multiples of 10.

  $243 \div 58$
  $\approx 240 \div 60$
  ≈ 4

To achieve a more accurate estimate when:

- Multiplying

  Round one number up and one down.

  24×87
  round down ↓, round up ↓
  $\approx 20 \times 90$
  ≈ 1800

- Dividing

  Round both numbers up or both numbers down.

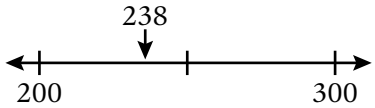
  $185 \div 12$
  round down ↓, round down ↓
  $\approx 180 \div 10$
  ≈ 18

1 Use the number lines below to round the numbers to the first digit.

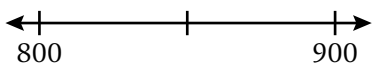
Tip Which number is it closest to?

a 46
≈ ___0

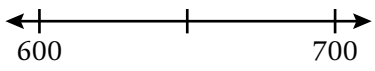
b 238
≈ __00



c 827
≈



d 671
≈



2 Circle the number that is closest to the following numbers.

a 374
300 or 400

b 56
50 or 60

c 748
700 or 800

3 Round to the first digit.

Tip A number rounded to the first digit will have a number from 1 to 9 as its first digit and all other digits zero.

e.g. 54 ← The second digit is a 4, so round 54 down to 50
≈ 50

a 395 ← The second digit is 9.
≈ ___00

b 228
≈ ___00

c 6099
≈ ___000

d 1700
≈

e 36 210
≈

4 Complete the following.

a
$3 \times 2 =$ _____
$3 \times 20 =$ _____
$30 \times 20 =$ _____
$30 \times 200 =$ _____

b
$4 \times 7 =$ _____
$40 \times 7 =$ _____
$40 \times 70 =$ _____
$400 \times 70 =$ _____

c
$8 \times 10 =$ _____
$8 \times 100 =$ _____
$8 \times 1000 =$ _____
$80 \times 100 =$ _____

d
$11 \times 5 =$ _____
$11 \times 50 =$ _____
$110 \times 50 =$ _____
$1100 \times 500 =$ _____

5 Round each number to the first digit, and then give an approximate answer to the multiplication.

a 23×48
$\approx$ __0 × __0
$=$ ___00

b 16×72
$\approx$ ☐ × ☐
$=$ ☐

c 57×64
$\approx$ ☐ × ☐
$=$ ☐

d 95×104
$\approx$ ☐ × ☐
$=$ ☐

6 **Estimate** the following divisions by first rounding each number to the first digit and then cancelling zeroes.

e.g. $319 \div 63$
$\approx 300 \div 60$ ← Round to first digit and cancel same number of zeroes for each number.
$= 30 \div 6$
$= 5$

a $84 \div 19$
$\approx$ ☐ ÷ ☐
$\approx$ ☐

b $227 \div 95$
$\approx$ ☐ ÷ ☐
$\approx$ ☐

c $756 \div 412$
$\approx$ ☐ ÷ ☐
$\approx$ ☐

d $570 \div 59$
$\approx$ ☐ ÷ ☐
$\approx$ ☐

7 The actual value of 43×108 is 4644. Calculate each of the following multiplications. Which product gives the closest estimate to 43×108?

a 40×110
$=$ ☐

b 50×110
$=$ ☐

c 40×100
$=$ ☐

d 50×100
$=$ ☐

The closest estimate to 43×108 is
_____ × _____ = _____

8 Look at the example and then estimate the quotient using the method of rounding to the nearest 10.

e.g. $249 \div 42$
$\approx 250 \div 40$ ← Round to nearest 10 then cancel the same number of zeroes (only if it is division).
$= 25 \div 4$
$\approx 24 \div 4$ ← Find the closest multiple of 4 to 25.
4: 4, 8, 12, 16, 20, 24, 28, 32
$= 6$ Therefore, $249 \div 42 \approx 6$

$476 \div 54$
$\approx$ ☐ ÷ ☐
$=$ ☐ ÷ ☐
$\approx$ ☐ ÷ ☐ ← Find the closest multiple of 5 to 48.
$=$ ☐ Therefore, $476 \div 54 \approx$ ☐

NAPLAN-ready

Shade the box beneath the correct answer.

The estimated answer to a calculation was 2400. What was the most likely calculation?

68×48	37×61	840×30	213×44
☐	☐	☐	☐

Tip Look at the options. Round each number to its first digit and calculate.

1.5 Order of operations

When evaluating an expression with different operations in it, we must calculate in the correct order.

e.g. $10 + 4 \times (5 - 3)$

$= 10 + 4 \times 2$ ← brackets first

$= 10 + 8$ ← multiply

$= 18$ ← add

The order:

1. brackets first
2. indices
3. ÷ and ×, from left to right
4. + and –, from left to right

1 Underline the part of the question that is to be answered first in each of the following questions.

a $4 \times 6 - 5$

b $17 + 30 \div 10 - 2$

c $3 \times 8 \div 2 + 14$

d $25 - 45 \div 9 \times (2 + 8)$

2 Answer the following questions, calculating the underlined part first.

a $18 - \underline{6 \times 2}$

$= 18 - \_\_\_\_$

$= \square$

b $\underline{20 \div 4} \times 5 - 9$

$= \_\_\_\_ \times 5 - 9$

$= \_\_\_\_ - 9$

$= \square$

c $12 + \underline{32 \div 8} - 7$

$= 12 + \_\_\_\_ - 7$

$= \_\_\_\_ - 7$

$= \square$

d $50 - 4 \times \underline{(6 + 2)}$

$= 50 - 4 \times \_\_\_\_$

$= 50 - \_\_\_\_$

$= \square$

3 The answers to the following questions are shown. Complete the working-out steps and check that your steps lead to the correct answer.

Tip Write the answer to each part directly underneath the question, then copy down the rest of the question.

a $5 \times (3 + 7)$

$= \square$

$= 50$

b $16 \div (10 - 2)$

$= \square$

$= 2$

c $9 + 4 \times 3$

$= \square$

$= 21$

d $4 \times (2 + 5)$

$= \square$

$= 28$

e $(14 - 2) + 3 \times 2 - 5$

$= \square$

$= \square$

$= \square$

$= 13$

f $6 \times 5 - 40 \div 10 + 7$

$= \square$

$= \square$

$= \square$

$= 33$

4 Place brackets in the following statements to make them true.

Tip Place the brackets and then check that you have the brackets in the right place by answering each question.

e.g. $3 + 7 \times 5 = 50$

$(3 + 7) \times 5 = 50$	$3 + (7 \times 5) = 50$
$10 \times 5 = 50$	$3 + 35 = 50$
$50 = 50$ ✓	$38 = 50$ ✗

a $12 - 5 \times 3 = 21$

$\_\_\_\_\_ = 21$

$\_\_\_\_ = 21$

b $6 \times 5 + 5 = 60$

$\_\_\_\_\_ = 60$

$\_\_\_\_ = 60$

c $12 - 6 \div 3 + 8 = 10$

$\_\_\_\_\_ = 10$

$\_\_\_\_\_ = 10$

$\_\_\_\_ = 10$

d $30 \div 5 \times 2 + 4 = 36$

$\_\_\_\_\_ = 36$

$\_\_\_\_\_ = 36$

$\_\_\_\_\_ = 36$

5 State true (T) or false (F) to the following statements.

a $7 + 4 \times 5 = (7 + 4) \times 5$

_____ = _____

_____ = _____ **T or F**

b $16 - 8 \div 2 = 16 - (8 \div 2)$

_____ = _____

_____ = _____ **T or F**

c $5 \div 5 + (2 \times 5) = 5 \div 5 + 2 \times 5$

_____ = _____

_____ = _____ **T or F**

d $5 \times (12 - 6) \div 3 = 5 \times 12 - (6 \div 3)$

_____ = _____

_____ = _____

_____ = _____ **T or F**

6 Insert operation signs (+, –, ×, ÷) below to make true number sentences. Use brackets if required.

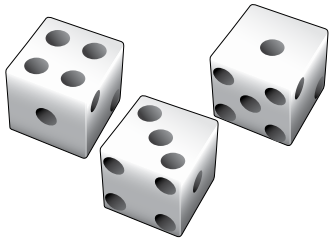
a 2 6 3 = 4

b 2 6 3 = 6

c 2 6 3 = 20

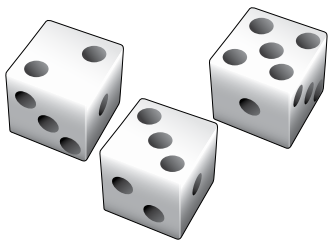
7 In the dice game 'Sixteen', players make a number sentence equal to 16 with the numbers rolled. Write a number sentence equal to 16 with the following numbers, the symbols +, –, ×, ÷, and brackets if necessary.

a



= 16

b



= 16

8 Write the value of the following numbers.

a $3^2 =$ ☐ **b** $5^2 =$ ☐

c $6^2 =$ ☐ **d** $10^2 =$ ☐

e $2^3 =$ ☐ **f** $3^3 =$ ☐

9 Answer the following questions involving indices.

Tip Brackets are completed first. Indices are then calculated before ×, ÷, + and –.

a $3 \times 2^2 + 6$

$= 3 \times$ ____ $+ 6$

$=$ ____ $+ 6$

$=$ ☐

b $30 - 4^2 \div 8$

$= 30 -$ ____ $\div 8$

$=$ _____

$=$ ☐

c $28 - 2 \times (3^2 + 1) - 2^3$

$= 28 - 2 \times ($_____$) - 2^3$

$= 28 - 2 \times$ ____ $-$ ____

$=$ _____

$=$ ☐

NAPLAN-ready

Shade the box beneath the correct answer.

Which expression is equal to 15?

$3 \times 8 + 12 \div 4$ ☐ $3 \times (8 + 12) \div 4$ ☐

$(3 \times 8 + 12) \div 4$ ☐ $3 \times (8 + 12 \div 4)$ ☐

Tip Order of operations:
- Brackets first.
- × and ÷
- + and –

1.6 Mixed whole number problems

Working with worded problems

When answering worded problems, follow these steps:

1. Read the question carefully.
2. Read it again, underlining key words and numbers.
3. Write a number sentence using symbols.
4. Calculate the answer.
5. Write the answer in a sentence.

An example: Monkey business

A zookeeper preparing food for the monkeys placed 24 bananas in a bowl. If there were 6 monkeys in the enclosure and they were expected to share equally, how many bananas should each monkey eat?

Write as a number sentence: $24 \div 6$

Calculate the answer: $24 \div 6 = 4$

Write the answer as a sentence:

Each monkey is expected to eat 4 bananas.

Word Bank

Sum (+)	Product (×)
Add	Multiply
Plus	Times
Total	Lots of
Altogether	Groups of
Difference (–)	**Quotient (÷)**
Subtract	Divide
Take away	Goes into
Less than	Shared between
Minus	

1 Write the following statements as number sentences with the symbols +, –, ×, ÷, =. You may need brackets for some.

Tip Check that each number sentence will result in the stated answer, following the order of operation rules.

a The **sum** of four and three is equal to seven.

b The **difference** of fourteen and eight is six.

c The **product** of nine and five is forty-five.

d Eighteen shared between three is six.

e Ten times the sum of seven and five is equal to one hundred and twenty.

f The total of nine and ten subtracted from twenty is one.

2 Answer the following by first writing the question as a number sentence with symbols.

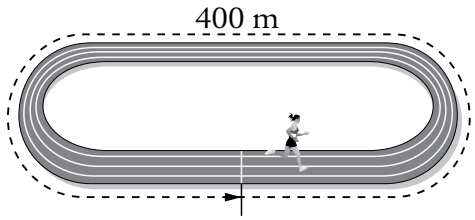
a Twenty less than forty-three.

b Nine is added to fifteen and the total is divided by three.

c The total of four groups of six and two groups of ten.

d Twelve is subtracted from the product of four and seven.

3 Read the following problem. The key words and numbers have been underlined.



An Olympic athletics track is 400 m long. How many laps are run in the 10 000 m race?

a Write a number sentence for the problem.

_____ ÷ _____

b Calculate the answer. _____

c Write the answer as a sentence with reference to the question.

_____ laps are run in the _____ race.

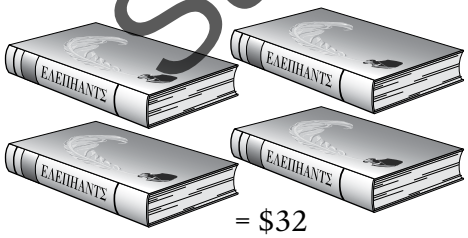
4 Write each of the following problems as a number sentence and then answer it.

a Thirty daffodil bulbs were divided into five boxes. How many bulbs were in each box?

=

There were _____ bulbs in each box.

b Four books cost $32. What is the cost of each book?



= $32

=

The cost of one book is _____

c In a long jump event, Trinh's best jump was 234 cm. Rose's best jump was 209 cm. What was the difference in distance between their best jumps?

=

The difference between their best jumps was _____ cm.

5 Read the following problem. The key words and numbers have been underlined.

A portable DVD player is on sale for $129. If the original price was $155, by how much has the DVD player been reduced for the sale?

a Write a number sentence.

_____

b Calculate the answer. _____

c Write the answer as a sentence with reference to the question.

_____

_____

6 Answer the following by first underlining key words, writing a number sentence and then writing the answer as a sentence.

In a game of AFL football, the West Coast Eagles won against the Adelaide Crows by 8 goals and 5 points. One goal is worth 6 points. By how many points did the Eagles win?

_____

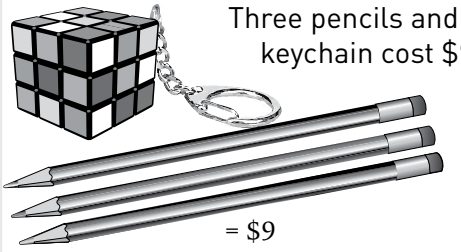
_____

_____

_____

NAPLAN-ready

Shade the box beneath the correct answer.


= $9

Three pencils and one keychain cost $9. If the keychain costs $3, what is the cost of each pencil?

$1	$2	$3	$6
☐	☐	☐	☐

Tip Subtract the cost of the keychain from the total and then divide by the number of pencils.