

Mathletics

The New Zealand Curriculum 2025

Year 7



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Chapter 1 Whole numbers

Review of Whole Numbers

Whole numbers are used every day — when you:

- handle money and budgets
- measure distances and time
- calculate totals and compare quantities

Understanding how numbers work helps you solve real problems quickly and accurately.



Key ideas

✓ Place value

The value of a digit depends on its position.

Example:

6,216,085 → 6 million, 2 hundred thousand

✓ Expanded form

Write a number as the sum of its parts.

Example: $5,325 = 5,000 + 300 + 20 + 5$

✓ The four operations

Add (combine), subtract (difference), multiply (groups), divide (share).

✓ Inverse operations

Operations that undo each other.

Example: $8 \times 5 = 40$ and $40 \div 5 = 8$

✓ Order of operations

Work in this order:

Brackets → $\times \div$ → $+-$

Example: $(8 + 2) \times 5 = 50$

✓ Estimation

Round numbers to check your answer.

Example: $198 + 302 \approx 500$

✓ Number laws

Rearrange numbers to make calculations easier.

Example: $7 + 3 + 5 = (7 + 3) + 5$



By the end of this chapter, you will be able to:

- read, write and understand large numbers
- use place value and expanded form
- calculate using the four operations
- apply the order of operations
- estimate and check answers
- solve real-world problems

You can write numbers using words and numerals.

Example:

380,243 = three hundred and eighty thousand, two hundred and forty-three

1 Write each number in words.

- | | |
|------------------|-----------------|
| a 20 = _____ | b 243 = _____ |
| c 9,001 = _____ | d 1,100 = _____ |
| e 21,509 = _____ | |
| f 57,018 = _____ | |

2 Write each large number in words.

- | |
|----------------------|
| a 306,543 = _____ |
| b 200,306 = _____ |
| c 900,500 = _____ |
| d 93,850 = _____ |
| e 2,400,537 = _____ |
| f 367,002 = _____ |
| g 53,200,015 = _____ |

3 Write in numerals.

- | | |
|---|-------|
| a Nine hundred and ninety-nine = | _____ |
| b Six thousand and seventy-five = | _____ |
| c Seven thousand, two hundred and eight = | _____ |
| d Twelve thousand, three hundred and sixty-nine = | _____ |
| e Nineteen thousand and eight = | _____ |
| f Fifty-three thousand, six hundred and forty = | _____ |

4 Write each large number using numerals.

- | | |
|---|-------|
| a Sixty-three thousand, five hundred and nine = | _____ |
| b Ninety thousand and six = | _____ |
| c Three hundred and five thousand, five hundred and six = | _____ |
| d Seven hundred and twenty-five thousand = | _____ |
| e Half a million = | _____ |
| f Five million, seven hundred thousand = | _____ |
| g Nine million and twenty-seven = | _____ |

- 1 For the number 587,623, the digit 6 has the value of 600 and the digit 2 has the value of 20.
 - a What is the value of the 7? _____
 - b What is the value of the 5? _____
 - c What is the value of the 3? _____
 - d What is the value of the 8? _____
- 2 What is the value of the 7?
 - a 973 _____
 - b 7,254 _____
 - c 457 _____
 - d 17,519 _____
 - e 7,601 _____
 - f 276,854 _____
 - g 95,712 _____
 - h 73,659 _____
- 3 Write down the value of the 8 and 9, in each of the following.
 - a 89 _____
 - b 829 _____
 - c 3,968 _____
 - d 5,398 _____
 - e 93,864 _____
 - f 85,694 _____
- 4 Make the smallest number possible using each of these digits once.
 - a 8, 7, 1 _____
 - b 6, 5, 1, 3, 8 _____
 - c 6, 1, 2, 4 _____
 - d 9, 7, 2, 5, 3, 6 _____
- 5 Make the largest number possible using each of these digits once.
 - a 3, 7, 2 _____
 - b 1, 5, 3, 8 _____
 - c 2, 0, 7, 5, 3 _____
 - d 4, 7, 3, 9, 2, 8 _____
- 6 Arrange the numbers from smallest to largest.
 - a 2,643, 18, 234 _____
 - b 678, 23, 8,964, 89 _____
 - c 5,683, 486, 29, 12,639 _____
 - d 674, 428, 1,623, 847 _____
- 7 Arrange in ascending order.
 - a 15, 10, 7, 18, 3, 5, 48 _____
 - b 19, 12, 0, 2, 14, 3 _____
 - c 35, 8, 6, 12, 45, 9 _____
 - d 67, 11, 221, 150, 205 _____
- 8 Arrange in descending order.
 - a 3, 27, 84, 10, 29, 36 _____
 - b 95, 120, 306, 48, 67, 31 _____
 - c 134, 216, 52, 38, 76, 196 _____
 - d 86, 357, 512, 159, 63, 207 _____



1 Add mentally.

- | | | | | | |
|---|---------------------|-------|---|---------------------|-------|
| a | $20 + 30 =$ | _____ | b | $70 + 90 =$ | _____ |
| c | $210 + 360 =$ | _____ | d | $200 + 400 + 600 =$ | _____ |
| e | $500 + 700 + 900 =$ | _____ | f | $800 + 200 + 900 =$ | _____ |
| g | $127 + 213 =$ | _____ | h | $340 + 660 =$ | _____ |
| i | $321 + 245 =$ | _____ | j | $120 + 280 + 37 =$ | _____ |
| k | $210 + 90 + 134 =$ | _____ | l | $540 + 60 + 239 =$ | _____ |



2 Subtract mentally.

- | | | | | | | | | |
|---|-----------------|-------|---|-----------------|-------|---|-------------------|-------|
| a | $50 - 20 =$ | _____ | b | $80 - 30 =$ | _____ | c | $320 - 120 =$ | _____ |
| d | $1,400 - 700 =$ | _____ | e | $1,600 - 600 =$ | _____ | f | $1,900 - 800 =$ | _____ |
| g | $343 - 139 =$ | _____ | h | $276 - 118 =$ | _____ | i | $537 - 128 =$ | _____ |
| j | $1,234 - 912 =$ | _____ | k | $1,655 - 245 =$ | _____ | l | $1,837 - 1,427 =$ | _____ |

3 Complete the additions.

- | | | | | | | | |
|---|--|---|---|---|---|---|---|
| a | $\begin{array}{r} 93 \\ + 56 \\ \hline \end{array}$ | b | $\begin{array}{r} 169 \\ + 563 \\ \hline \end{array}$ | c | $\begin{array}{r} 210 \\ + 269 \\ \hline \end{array}$ | d | $\begin{array}{r} 189 \\ + 514 \\ \hline \end{array}$ |
| e | $\begin{array}{r} 563 \\ 632 \\ + 521 \\ \hline \end{array}$ | f | $\begin{array}{r} 10,937 \\ 14,837 \\ + 21,638 \\ \hline \end{array}$ | g | $\begin{array}{r} 8,931 \\ 61,240 \\ + 6,973 \\ \hline \end{array}$ | h | $\begin{array}{r} 81,937 \\ 128,567 \\ + 727,359 \\ \hline \end{array}$ |

4 Complete the subtractions.

- | | | | | | | | |
|---|---|---|--|---|---|---|---|
| a | $\begin{array}{r} 639 \\ - 213 \\ \hline \end{array}$ | b | $\begin{array}{r} 853 \\ - 424 \\ \hline \end{array}$ | c | $\begin{array}{r} 954 \\ - 637 \\ \hline \end{array}$ | d | $\begin{array}{r} 600 \\ - 244 \\ \hline \end{array}$ |
| e | $\begin{array}{r} 8,368 \\ - 2,589 \\ \hline \end{array}$ | f | $\begin{array}{r} 43,639 \\ - 8,327 \\ \hline \end{array}$ | g | $\begin{array}{r} 312,836 \\ - 109,521 \\ \hline \end{array}$ | h | $\begin{array}{r} 538,437 \\ - 257,116 \\ \hline \end{array}$ |

1 Multiply mentally.

- | | | | |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| a $8 \times 7 =$ _____ | b $9 \times 6 =$ _____ | c $7 \times 9 =$ _____ | d $9 \times 9 =$ _____ |
| e $10 \times 6 =$ _____ | f $20 \times 8 =$ _____ | g $50 \times 5 =$ _____ | h $90 \times 7 =$ _____ |
| i $300 \times 4 =$ _____ | j $500 \times 8 =$ _____ | k $900 \times 3 =$ _____ | l $400 \times 8 =$ _____ |
| m $235 \times 8 =$ _____ | n $512 \times 9 =$ _____ | o $816 \times 4 =$ _____ | p $925 \times 6 =$ _____ |

2 Write the answer to each division.

- | | | | |
|------------------------------|------------------------------|-------------------------------|-------------------------------|
| a $32 \div 4 =$ _____ | b $36 \div 6 =$ _____ | c $56 \div 7 =$ _____ | d $63 \div 7 =$ _____ |
| e $64 \div 8 =$ _____ | f $72 \div 9 =$ _____ | g $27 \div 3 =$ _____ | h $81 \div 9 =$ _____ |
| i $39 \div 3 =$ _____ | j $45 \div 5 =$ _____ | k $84 \div 7 =$ _____ | l $70 \div 5 =$ _____ |
| m $66 \div 6 =$ _____ | n $96 \div 8 =$ _____ | o $625 \div 5 =$ _____ | p $392 \div 7 =$ _____ |

3 Complete each multiplication.

- | | | | | | | | |
|----------|--|----------|---|----------|---|----------|--|
| a | $\begin{array}{r} 4,362 \\ \times \quad 5 \\ \hline \\ \hline \end{array}$ | b | $\begin{array}{r} 15,893 \\ \times \quad 7 \\ \hline \\ \hline \end{array}$ | c | $\begin{array}{r} 85,321 \\ \times \quad 8 \\ \hline \\ \hline \end{array}$ | d | $\begin{array}{r} 135,210 \\ \times \quad 9 \\ \hline \\ \hline \end{array}$ |
| e | $\begin{array}{r} 568 \\ \times \quad 47 \\ \hline \\ \hline \end{array}$ | f | $\begin{array}{r} 732 \\ \times \quad 38 \\ \hline \\ \hline \end{array}$ | g | $\begin{array}{r} 9,638 \\ \times \quad 54 \\ \hline \\ \hline \end{array}$ | h | $\begin{array}{r} 10,534 \\ \times \quad 79 \\ \hline \\ \hline \end{array}$ |

4 Divide, giving any remainders as simple fractions.

- | | | | | | | | |
|----------|--|----------|--|----------|--|----------|--|
| a | $\begin{array}{r} 4 \overline{) 960} \end{array}$ | b | $\begin{array}{r} 9 \overline{) 5,283} \end{array}$ | c | $\begin{array}{r} 8 \overline{) 489} \end{array}$ | d | $\begin{array}{r} 7 \overline{) 635} \end{array}$ |
| e | $\begin{array}{r} 20 \overline{) 809} \end{array}$ | f | $\begin{array}{r} 40 \overline{) 7,280} \end{array}$ | g | $\begin{array}{r} 56 \overline{) 3,468} \end{array}$ | h | $\begin{array}{r} 24 \overline{) 8,305} \end{array}$ |

- 5 **a** Six farmers bought 12,024 sheep together. How many sheep will each farmer have?

Est. _____

Answer _____



- b** I have paid \$1,260 for health insurance for one year. My brother pays \$816 for 8 months. Who has the better monthly rate?

Est. _____

Answer _____

1 Simplify.

a $(8 + 12) - 5$

= _____

c $(8 + 12) + (6 + 4)$

= _____

e $18 \times (42 \div 7)$

= _____

g $12 + 13 + 5 - 7$

= _____

b $64 - (30 + 5)$

= _____

d $(5 + 7) \times 3$

= _____

f $(62 + 10) \div (36 \div 4)$

= _____

h $64 - 12 - 6 - 4$

= _____

i $8 \times 2 \times 2 \times 3$

= _____

Order of Operations

1 Grouping () []

2 Multiplication and division $\times \div$

3 Addition and subtraction $+$ $-$

2 Simplify.

a $9 + 2 \times 5 + 7$

= _____

d $12 \times (8 - 3) \div (17 - 7)$

= _____

g $64 + 2 \times (28 - 8 \times 2)$

= _____

b $32 + 18 \times 5$

= _____

e $(34 + 14) \div 6$

= _____

h $96 \div (4 + 8) \times 5$

= _____

c $85 - 18 \div 9 + 20$

= _____

f $84 - 5 \times (15 - 3) + 25$

= _____

i $8 \times (28 + 8) \div 4$

= _____

3 Use the order of operations to simplify.

a $[(10 + 5) \div 3] \times 7$

= _____

d $[(24 + 11) \div 7] \times 9$

= _____

g $12 \times (7 + 3 - 2)$

= _____

b $30 \times [(36 \div 9) \times 2] - 6$

= _____

e $[8 + (8 \times 8)] \div 8$

= _____

h $[(8 \times 9 + 4) - 12] \div 4$

= _____

c $[(4 + 8) \times (19 - 14) \div 4]$

= _____

f $6 \times [(2 + 14) \times (13 - 6)]$

= _____

i $(15 \div 15 \times 2) - 2$

= _____

4 Insert grouping symbols to make each statement true.

a $16 + 9 \times 0 = 0$

= _____

d $144 \div 12 - 7 \times 3 = 15$

= _____

g $32 + 5 \times 2 = 4 \times 3 + 4$

= _____

b $14 + 8 - 6 \times 3 = 20$

= _____

e $24 + 12 \div 4 + 5 = 4$

= _____

h $16 - 8 + 8 \times 4 = 17 + 3 + 5 \times 4$

= _____

c $15 - 7 \times 9 = 72$

= _____

f $72 \div 12 - 3 + 2 = 10$

= _____

Commutative:

$$a + b = b + a$$

$$a \times b = b \times a$$

Associative:

$$(a + b) + c = a + (b + c)$$

$$(a \times b) \times c = a \times (b \times c)$$

Distributive:

$$(a + b) \times c = (a \times c) + (b \times c)$$

$$(a - b) \times c = (a \times c) - (b \times c)$$

1 a Does $4 + 7 = 7 + 4$? _____

b Does $3 \times 8 = 8 \times 3$? _____

c Which number law are you using? _____

Use this law to find the missing number in .

d $5 + 9 = 9 + \square$

e $14 + 6 = 6 + \square$

f $6 \times 7 = 7 \times \square$

g $9 \times 4 = 4 \times \square$

2 a Does $(4 + 5) + 7 = 4 + (5 + 7)$? _____

b Does $(3 \times 2) \times 5 = 3 \times (2 \times 5)$? _____

c Which number law are you using? _____

Use this law to find the missing number in .

d $(7 + 8) + 5 = 7 + (8 + \square)$

f $(12 + 9) + \square = 12 + (9 + 11)$

e $(5 \times 6) \times 2 = 5 \times (\square \times 2)$

h $(9 \times \square) \times 3 = 9 \times (2 \times 3)$

3 a Does $5 \times (2 + 3) = 5 \times 2 + 5 \times 3$? _____

b Does $3 \times (7 - 4) = 3 \times 7 - 3 \times 4$? _____

c Which number law are you using? _____

Use this law to find the missing number in .

d $7 \times (6 + 3) = 7 \times 6 + 7 \times \square$

e $4 \times (5 + \square) = 4 \times 5 + 4 \times 8$

f $2 \times (17 - 9) = \square \times 17 - \square \times 9$

g $8 \times 4 - 8 \times 2 = 8 \times (\square - 2)$

4 Use the commutative or associative law for addition.

a $25 + 7 + 3$ _____

b $8 + 12 + 9$ _____

c $10 + 28 + 2$ _____

d $26 + 20 + 4$ _____

e $12 + 17 + 8$ _____

f $15 + 36 + 5 + 14$ _____



The distribution rule:	Combine	or Split	53×4
	$16 \times 6 + 16 \times 4$		$(50 + 3) \times 4$
	$16 \times (6 + 4)$		$(50 \times 4) + (3 \times 4)$
	$16 \times 10 = 160$		$200 + 12 = 212$

1 Combine to answer these questions.

- | | |
|--|---|
| a $12 \times 7 + 12 \times 3$ _____ | b $54 \times 11 + 54 \times 9$ _____ |
| c $83 \times 14 + 83 \times 86$ _____ | d $93 \times 7 - 93 \times 6$ _____ |
| e $68 \times 131 - 68 \times 31$ _____ | f $267 \times 28 - 267 \times 18$ _____ |

2 Split to answer these questions.

- a $52 \times 8 =$ _____
- b $73 \times 9 =$ _____
- c $82 \times 6 =$ _____
- d $65 \times 7 =$ _____



3 Use the commutative or associative law for multiplication.

- | | |
|-----------------------------------|--|
| a $50 \times 2 \times 26 =$ _____ | b $5 \times 9 \times 7 \times 2$ _____ |
| c $25 \times 8 \times 4 =$ _____ | d $10 \times 5 \times 2 \times 19$ _____ |
| e $48 \times 72 \times 0 =$ _____ | f $4 \times 9 \times 5 \times 10$ _____ |

4 Make the following statements true.

- | | |
|---|---|
| a $5 + 8 = \square + 5$ | b $6 + 14 = 14 + \square$ |
| c $(2 \times 3) \times 9 = 2 \times (\square \times 9)$ | d $(7 \times 9) \times (6 \times 5) = 5 \times 9 \times (7 \times \square)$ |
| e $4 \times (8 + \square) = 4 \times 8 + 4 \times 7$ | f $21 \times 9 + 21 \times 11 = \square \times (9 + 11)$ |
| g $25 \times (3 + 8) = 25 \times \square + 25 \times 8$ | h $14 \times 3 + 14 \times 12 = \square \times (3 + 12)$ |

5 Use the commutative, associative or distributive law to find the answer.

- | | |
|--|---|
| a $(8 \times 5) \times 4$ _____ | b $25 \times 7 \times 8 \times 4$ _____ |
| c $10 \times 9 \times 6 \times 5 \times 2$ _____ | d $5 \times 37 \times 20$ _____ |
| e $48 \times 5 \times 10 \times 2$ _____ | f $9 \times 4 \times 5 \times 7 \times 5$ _____ |

1 Round to the nearest whole number.

- | | | |
|-------------------|-------------------|------------------|
| a $8.2 =$ _____ | b $9.13 =$ _____ | c $5.46 =$ _____ |
| d $31.5 =$ _____ | e $81.9 =$ _____ | f $3.51 =$ _____ |
| g $63.18 =$ _____ | h $39.09 =$ _____ | i $63.7 =$ _____ |

2 Round to the nearest ten.

- | | | |
|-------------------|--------------------|-------------------|
| a $56 =$ _____ | b $83 =$ _____ | c $92 =$ _____ |
| d $129 =$ _____ | e $365 =$ _____ | f $533 =$ _____ |
| g $3,541 =$ _____ | h $10,356 =$ _____ | i $8,932 =$ _____ |

3 Round to the nearest hundred.

- | | | |
|-------------------|-------------------|-------------------|
| a $867 =$ _____ | b $960 =$ _____ | c $432 =$ _____ |
| d $3,256 =$ _____ | e $8,365 =$ _____ | f $9,365 =$ _____ |
| g $596 =$ _____ | h $3,543 =$ _____ | i $6,831 =$ _____ |

4 Round to the nearest thousand.

- | | | |
|-------------------|-------------------|--------------------|
| a $8,647 =$ _____ | b $6,349 =$ _____ | c $52,138 =$ _____ |
| d $9,681 =$ _____ | e $5,963 =$ _____ | f $68,009 =$ _____ |
| g $9,325 =$ _____ | h $8,312 =$ _____ | i $15,693 =$ _____ |

5 Round 17,835,249 to the nearest

- | | | |
|--------------------|-----------------------------|-------------------------|
| a ten
_____ | b thousand
_____ | c million
_____ |
| d hundred
_____ | e hundred thousand
_____ | f ten thousand
_____ |

6 When a whole number is rounded to the nearest ten the answer is 100.

- a What is the smallest number that this whole number could be? _____
- b What is the largest number that this whole number could be? _____

7 Use rounding to estimate the answer.

- | | | |
|---|---|---|
| a 32×51
$\boxed{30} \times \boxed{50} = \boxed{}$ | b 62×29
$\boxed{} \times \boxed{} = \boxed{}$ | c 21×39
$\boxed{} \times \boxed{} = \boxed{}$ |
| d 11×59
$\boxed{} \times \boxed{} = \boxed{}$ | e 41×39
$\boxed{} \times \boxed{} = \boxed{}$ | f 19×69
$\boxed{} \times \boxed{} = \boxed{}$ |

Problem solving with whole numbers

Chapter 1 Whole numbers

- 1 Find the sum of 36 metres, 53 metres and 21 metres.

- 2 There are 30 students in a class, 8 students leave to go to the office and 5 students come back from a meeting. How many students are in the class now?

- 3 How many apples are there altogether in three boxes of 45, 56 and 52?

- 4 Find the product of 32 and 16.

- 5 Find the price of 75 oranges at 15 cents each.

- 6 How many books are in 120 cases each containing 36 books?

- 7 How many months are in 37 years?

- 8 The product of a number multiplied by itself is 400. What is the number?

- 9 Peter has 10 boxes of 15 books each. He decides to pack equal number of books in 15 boxes. How many books will be in each box?

- 10 Hari's marks are 70, 85, 63, 92 and 89. What is his total mark?

- 11 Find the total number of days in the months of May, June and July.

- 12 Katie has 5 bags each containing 10 balls and she also has 32 loose balls. Find the total number of balls she has.

- 13 How many minutes are in 15 hours?



When we work with large numbers, there are lots of zeros.

It can be easier to express the number using **exponents or powers**.

$$10^2 = 10 \times 10 = 100$$

$$10^3 = 10 \times 10 \times 10 = 1,000$$

$$10^4 = 10 \times 10 \times 10 \times 10 = 10,000$$

$$\begin{array}{c} \text{power} \\ \downarrow \\ 10^2 = 100 \\ \uparrow \\ \text{base} \end{array}$$

- What connection can you see between the **power** and the **amount of zeros**? _____
- Express the numbers below using powers:
 - 1,000 = _____
 - 10 = _____
 - 10,000 = _____
 - 100,000 = _____
 - 100 = _____
 - 10,000,000 = _____
 - 1,000,000 = _____
 - 100,000,000 = _____
 - 1,000,000,000 = _____
- Compare these numbers. Use <, > or = as needed:
 - 1,000 10^2
 - 100 10^2
 - 10,000 10^4
 - 100,000 10^3
 - 10^5 1,000,000
 - 10^6 1,000,000
- Write each number in standard form.
 - $10^3 =$ _____
 - $10^5 =$ _____
 - $10^6 =$ _____
 - $10^2 =$ _____
 - $10^4 =$ _____
 - $10^7 =$ _____
- Fill in the missing power.
 - 1,000 = 10
 - 100,000 = 10
 - 10,000,000 = 10
- Write each number in standard form.
 - $10^2 = 100$
 - $10^5 = 100,000$
 - $10^3 =$ _____
 - $10^6 =$ _____
 - $10^4 =$ _____
 - $10^7 =$ _____



- Complete the cross number puzzle:

1		2			3	
4			5			
6						

Across

- one million thirty seven thousand eight hundred and fourteen
- three million and forty nine thousand five hundred and six
- 10^6

Down

- one hundred and thirty three thousand eight hundred and fourteen
- three hundred and eighty four thousand
- 10^5
- nine thousand six hundred and two

$$3,154,231 = 3,000,000 + 100,000 + 50,000 + 4,000 + 200 + 30 + 1$$

26,526,900

Review of Whole Numbers

- Instructions**
- This part consists of 12 multiple-choice questions.
 - Fill in only ONE CIRCLE for each question.
 - Each question is worth 1 mark.
 - Calculators are NOT allowed.

Time allowed: 15 minutes

Total marks: 12

1	264 + 135 equals	(A) 299	(B) 389	(C) 399	(D) 489	
2	485 - 212 equals	(A) 373	(B) 393	(C) 283	(D) 273	
3	21 + 7 + 19 + 3 + 17 + 8 equals	(A) 68	(B) 75	(C) 79	(D) 85	
4	Which is 10^4 ?	(A) 100	(B) 1,000	(C) 10,000	(D) 10,000,000	
5	$4 \times 15 + 30 \times 7$ equals	(A) 260	(B) 270	(C) 250	(D) 170	
6	$64 \div 4 + 25$ equals	(A) 41	(B) 31	(C) 51	(D) 33	
7	Add the product of 14 and 3 to the sum of 11 and 9.	(A) 47	(B) 27	(C) 52	(D) 62	
8	$120 - 20 \times 6$ equals	(A) 100	(B) 0	(C) 600	(D) 120	
9	Which is the largest?	(A) 8,008	(B) 8,880	(C) 8,080	(D) 8,808	
10	Choose the two numbers that have a sum of 13 and a product of 42.	(A) 4 and 9	(B) 5 and 8	(C) 6 and 7	(D) 2 and 11	
11	$10 \times 8 + 15 \times 0$ equals	(A) 80	(B) 70	(C) 60	(D) 100	
12	The value of $85 - (18 \div 6)$ is	(A) 88	(B) 82	(C) 61	(D) none of these	

Total marks achieved for PART A

12

Review of Whole Numbers

- Instructions**
- This part consists of 15 questions.
 - Each question is worth 1 mark.
 - Write only the answer in the answer column.
 - For any working use the question column. Calculators are NOT allowed.

Time allowed: 20 minutes

Total marks: 15

Questions

Answers

Marks

- Write sixty-five thousand, six hundred and nine in digits.
- Write the largest three-digit numeral.
- Write the basic numeral for $9,000 + 500 + 70 + 5$.
- Find the answers to the following.

a

$$\begin{array}{r} 231 \\ 50 \\ + 1,385 \\ \hline \end{array}$$

b

$$\begin{array}{r} 638 \\ \times 25 \\ \hline \end{array}$$
- Simplify the following.

a $80 \div 10 \times 5 \times 3$

b $[(48 + 24) \div 9] \times 15$
- Add the sum of 72 and 98 to the difference of 85 and 36.
- Round 870,925 to the nearest thousand.
- Find the total number of hours in 235 days.
- Write two million, six hundred and seven in digits.
- Find the sum of $900 + 800 + 54 + 21$.
- Find the difference between 3,109 and 219.
- Find the product of $40 \times 30 \times 20 \times 10 \times 5$.
- Write the number that is one more than one hundred thousand.
- Write the number: $(4 \times 10^3) + (7 \times 10^2) + (9 \times 10^1) + 2$
- What is the next number after 9,999?

1

1

1

1

Total marks achieved for PART B

15

Chapter 2 Computations with integers

Computations with integers

Integers help us describe changes in the real world — such as:

- temperature above and below zero
- money gained or lost
- height above or below sea level

They help us understand direction, change and comparison.



Key ideas

✓ Integers value

Integers include positive numbers, negative numbers and zero. Example: -3 , 0 , 5

✓ Number lines

Integers can be shown on a number line.

Numbers increase to the right and decrease to the left.

✓ Opposites

Every number has an opposite the same distance from zero. Example: 5 and -5

✓ Absolute value

The distance from zero (always positive).

Example: $|-7| = 7$

✓ Adding integers

Move right for positive, left for negative.

Example: $-3 + 5 = 2$

✓ Subtracting integers

Subtracting is the same as adding the opposite. Example: $6 - (-2) = 6 + 2 = 8$

✓ Multiplying and dividing integers

- Same signs $\rightarrow$ positive
- Different signs $\rightarrow$ negative

Example: $(-3) \times 4 = -12$

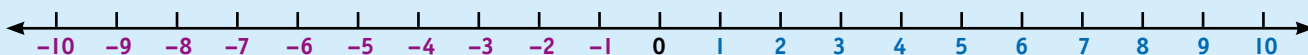
By the end of this chapter, you will be able to:

- identify and represent integers on a number line
- compare and order positive and negative numbers
- add and subtract integers using models and rules
- multiply and divide integers
- solve real-world problems involving integers

The New Zealand Curriculum Mathematics and Statistics 2025

Knowledge	Practices
Number	Number Structures and Operations
The number system extends infinitely, including into negative numbers, and can be represented with a number line. Integers are all the whole numbers, including positive whole numbers, negative whole numbers, and zero. Every number has an additive inverse, and their sum is zero (e.g. -5 and 5 are additive inverses; $-5 + 5 = 0$ and $5 + -5 = 0$).	Locating integers on a number line
	Ordering whole negative and positive numbers using a number line
	Identifying the additive inverse of any number
	Representing addition and subtraction of integers using a number line
	Using negative numbers to solve problems in a range of contexts, including the measurement of temperature and finance
Algebra	Evaluating expressions using the order of operations
	Equations and relationships
	Completing number sentences including the use of inequalities

Integers are all the whole numbers, including **positive** and **negative** whole numbers and zero.



1 Complete the following.

- a The numbers 1, 2, 3, 4, 5, 6, ... are _____ integers.
b The numbers ..., -4, -3, -2, -1 are _____ integers.
c The number 0 is neither _____ nor _____.

2 a Write all the integers greater than 1 but less than 8. _____

b Write all the integers less than 3 but greater than -4. _____

c Write all the integers less than 2 but greater than -3. _____

d Write all the integers less than -3 but greater than -10. _____

3 a Arrange the following integers from smallest to largest:

-10, 20, 5, 0, 72, -500, -9, -300, 12

b Arrange the following integers from largest to smallest:

35, -15, -10, 8, 0, 26, 125, -200, -96, 58, 320

4 Write the additive inverse of each integer.

a 9 _____ b -4 _____ c -8 _____

d -73 _____ e -64 _____ f 8 _____

g -62 _____ h 15 _____ i 7 _____

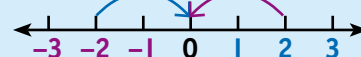
j -27 _____ k 6 _____ l -59 _____

m -120 _____ n 36 _____ o -82 _____

p 18 _____

Every number has an
additive inverse, an
opposite and their
sum is zero.

$$-2 + 2 = 0 \quad 2 + -2 = 0$$

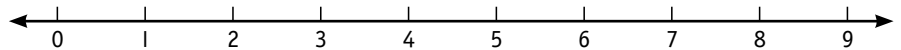


5 Write the symbol > or < in each box to make it a true number statement.

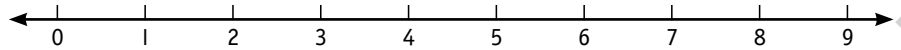
- | | | | |
|---------------------|--------------------|-------------------|--------------------|
| a $3 \square 5$ | b $8 \square -4$ | c $-9 \square -2$ | d $5 \square -3$ |
| e $9 \square -6$ | f $-10 \square -1$ | g $-8 \square -3$ | h $-15 \square -7$ |
| i $-26 \square -18$ | j $16 \square -2$ | k $-3 \square 14$ | l $7 \square -2$ |

1 Plot the following integers on the number line.

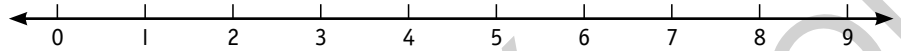
a $\{0, 2, 3, 5\}$



b $\{0, 3, 6, 9\}$



c $\{1, 4, 5, 7, 8\}$



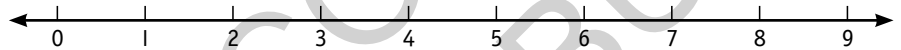
d $\{0, 1, 2, 3, 6\}$



e the odd integers



f the even integers

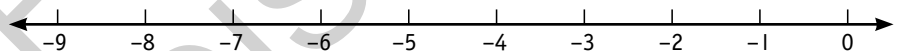


g the integers from 1 to 5

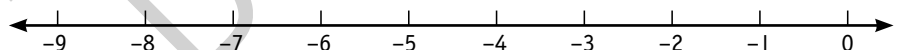


2 Plot the following integers on the number line.

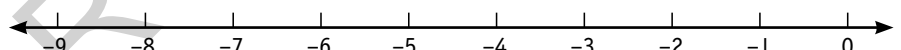
a $\{0, -3, -6, -9\}$



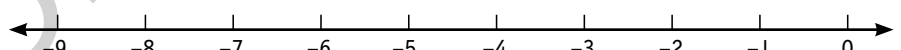
b $\{0, -2, -5, -9\}$



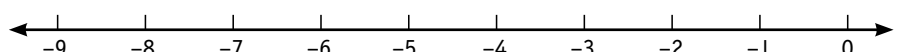
c $\{0, -1, -8, -9\}$



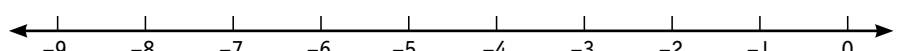
d $\{-1, -3, -6, -8\}$



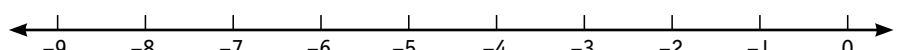
e the odd integers



f the even integers



g the integers from -3 to -8



3 Find the position of M if it moves

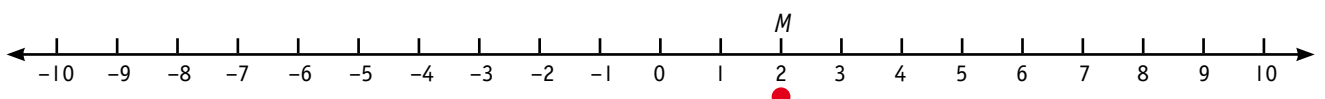
a 3 places to the right

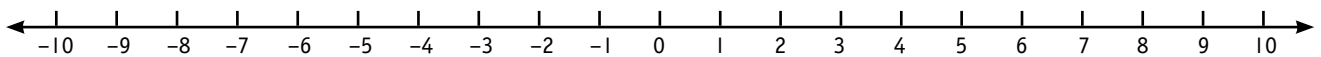
b 5 places to the right

c 7 places to the left

d 8 places to the left

e 6 places to the right, then 9 places to the left

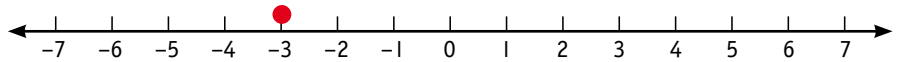




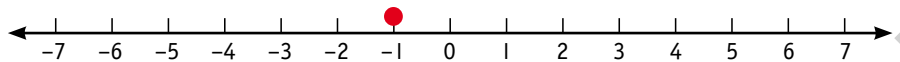
- 1 A hiker is currently on +1 position. Find where the hiker will be if he hikes:
 - a 4 steps up _____
 - b 3 steps down _____
 - c 2 steps up _____
 - d 6 steps down _____
 - e 5 steps up then 8 steps down _____
 - f 4 steps down then 7 steps up _____
 - g 4 steps down then 6 steps down _____
 - h 1 step up then 9 steps down _____
- 2 Manahil's current bank account is $-\$3$. What will be her account balance if she:
 - a is charged $\$7$? _____
 - b deposits $\$5$? _____
 - c is charged $\$6$? _____
 - d deposits $\$10$? _____
 - e is charged $\$8$? _____
 - f deposits $\$4$ and is then charged $\$9$? _____
 - g is charged $\$5$ and then another $\$3$? _____
 - h is charged $\$7$ and then deposits $\$6$? _____
- 3 Adam is currently 3 floors above ground level (+3). On what floor will he be if he goes:
 - a 2 floors up? _____
 - b 4 floors down? _____
 - c 3 floors up? _____
 - d 5 floors down? _____
 - e 2 floors up then 6 floors down? _____
 - f 3 floors down then 5 floors up? _____
 - g 1 floor up then 6 floors down? _____
- 4 Donna is playing a game where the points score can be positive or negative. She has 3 points. How many points will she have if she:
 - a loses 4 points? _____
 - b gains 2 points? _____
 - c loses 7 points? _____
 - d loses 10 points? _____
 - e gains 2 points then loses 7 points? _____
 - f gains 5 points then loses 10 points? _____
 - g loses 4 points then loses another 4 points? _____
- 5 Use positive and negative integers to solve each problem.
 - a A scuba diver starts at sea level (0 m). She dives down 18 m, then rises 7 m.
What depth is she now at? _____
 - b The temperature in Christchurch is 4°C in the afternoon. Overnight, the temperature drops 11°C .
What is the overnight temperature? _____
 - c A gamer starts with 15 points. They lose 22 points during a challenge, then gain 9 points back.
What is their final score? _____
 - d A bank account balance is $-\$14$. A deposit of $\$20$ is made, then a payment of $\$11$ is taken out.
What is the final balance? _____

1 Evaluate the following:

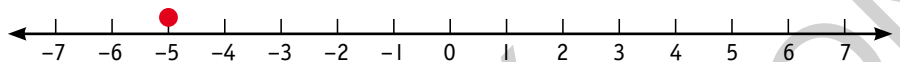
a $-3 + 4 =$ _____



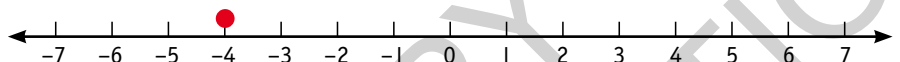
b $-1 + 2 =$ _____



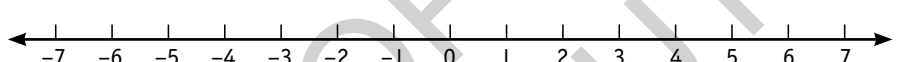
c $-5 + 3 =$ _____



d $-4 + 6 =$ _____



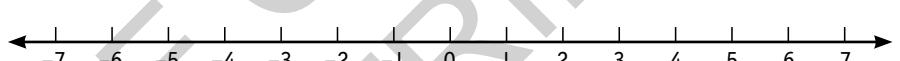
e $-6 + 4 =$ _____



f $-2 + 6 =$ _____



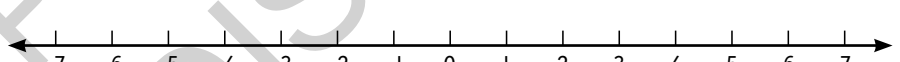
g $-5 + 7 =$ _____



h $-7 + 5 =$ _____



i $-4 + 7 =$ _____



2 Evaluate:

a $-7 + 3 =$ _____

b $-4 + 5 =$ _____

c $-2 + 8 =$ _____

d $-3 + 9 =$ _____

e $-1 + 5 =$ _____

f $-7 + 2 =$ _____

g $-6 + 8 =$ _____

h $-2 + 4 =$ _____

i $-8 + 3 =$ _____

j $-5 + 8 =$ _____

k $-6 + 2 =$ _____

l $-3 + 7 =$ _____

m $-2 + 2 =$ _____

n $-5 + 5 =$ _____

o $-7 + 10 =$ _____

3 Explore the patterns:

a Complete the pattern.

$-7 + 7 = 0$
 $-6 + 6 =$ _____
 $-5 + 5 =$ _____
 $-4 + 4 =$ _____

What do you notice?

b Complete the pattern.

$-8 + 10 = 2$
 $-7 + 10 =$ _____
 $-6 + 10 =$ _____
 $-5 + 10 =$ _____

Describe the pattern.

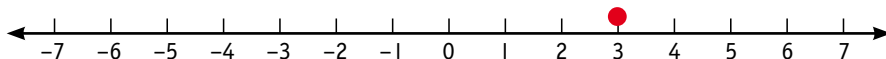
c Which expression has the greatest value?

$-4 + 9$
 $-8 + 12$
 $-3 + 5$
 $-10 + 15$

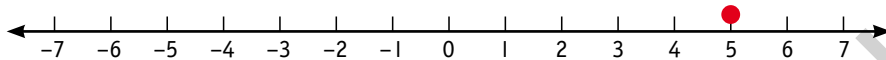
Explain your reasoning.

1 Evaluate the following:

a $3 + (-4) =$ _____



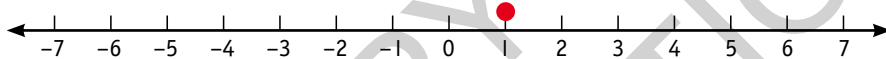
b $5 + (-6) =$ _____



c $4 + (-2) =$ _____



d $1 + (-4) =$ _____



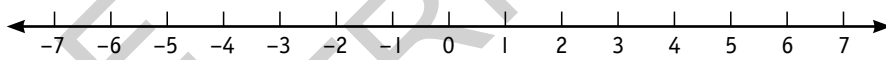
e $2 + (-6) =$ _____



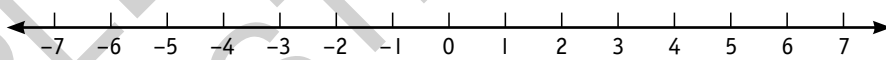
f $4 + (-3) =$ _____



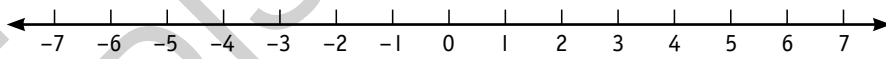
g $5 + (-8) =$ _____



h $2 + (-4) =$ _____



i $6 + (-5) =$ _____



2 Evaluate:

a $4 + (-8) =$ _____

b $3 + (-6) =$ _____

c $2 + (-6) =$ _____

d $5 + (-5) =$ _____

e $3 + (-3) =$ _____

f $4 + (-10) =$ _____

g $2 + (-10) =$ _____

h $7 + (-6) =$ _____

i $2 + (-8) =$ _____

j $2 + (-9) =$ _____

k $5 + (-7) =$ _____

l $9 + (-8) =$ _____

m $8 + (-5) =$ _____

n $4 + (-6) =$ _____

o $5 + (-10) =$ _____

3 Explore the patterns:

a Complete the pattern.

$3 + (-3) = 0$

$5 + (-5) =$ _____

$8 + (-8) =$ _____

$12 + (-12) =$ _____

What do you notice? _____

b Complete the pattern.

$7 + (-10) = -3$

$8 + (-10) =$ _____

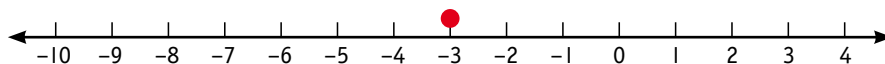
$9 + (-10) =$ _____

$10 + (-10) =$ _____

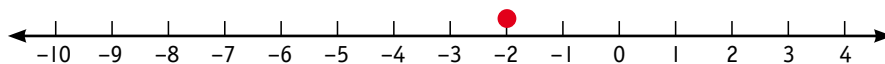
Describe the pattern. _____

1 Evaluate the following:

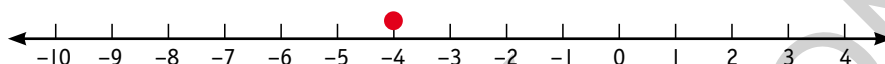
a $-3 + (-3) =$ _____



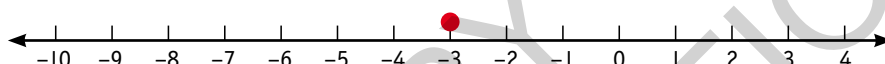
b $-2 + (-5) =$ _____



c $-4 + (-3) =$ _____



d $-3 + (-1) =$ _____



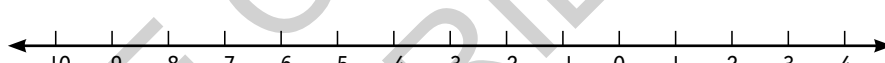
e $-5 + (-3) =$ _____



f $-6 + (-3) =$ _____



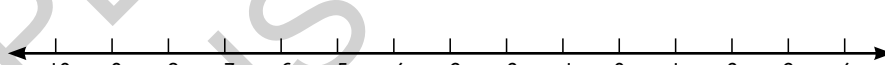
g $-1 + (-7) =$ _____



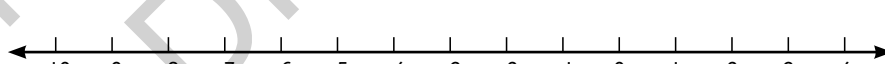
h $-5 + (-4) =$ _____



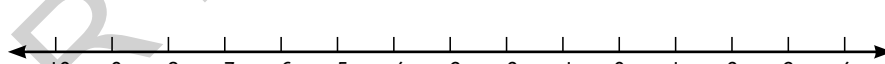
i $-2 + (-6) =$ _____



j $-1 + (-5) =$ _____



k $-4 + (-4) =$ _____



2 Evaluate:

a $-4 + (-2) =$ _____

b $-1 + (-6) =$ _____

c $-2 + (-4) =$ _____

d $-5 + (-1) =$ _____

e $-2 + (-2) =$ _____

f $-6 + (-2) =$ _____

g $-7 + (-1) =$ _____

h $-3 + (-4) =$ _____

i $-5 + (-3) =$ _____

j $-2 + (-3) =$ _____

k $-6 + (-4) =$ _____

l $-8 + (-2) =$ _____

m $-7 + (-2) =$ _____

n $-4 + (-7) =$ _____

o $-5 + (-10) =$ _____

p $-3 + (-8) =$ _____

q $-4 + (-10) =$ _____

r $-5 + (-8) =$ _____

3 Evaluate:

a $34 + (-49) =$ _____

b $-27 + (-62) =$ _____

c $-57 + (-31) =$ _____

d $-147 + (-252) =$ _____

e $-328 + (-450) =$ _____

f $-529 + (-251) =$ _____

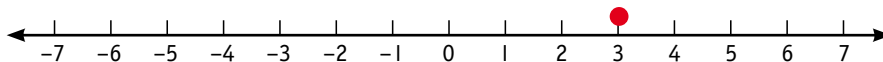
g $-427 + (-328) =$ _____

h $-718 + (-174) =$ _____

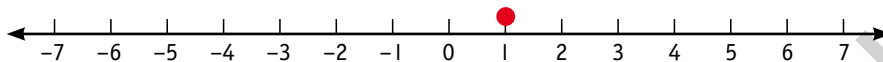
i $-389 + (-611) =$ _____

1 Evaluate the following:

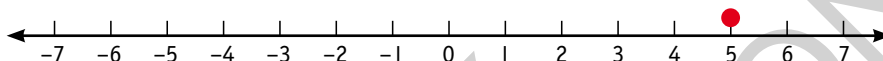
a $3 - 8 =$ _____



b $1 - 2 =$ _____



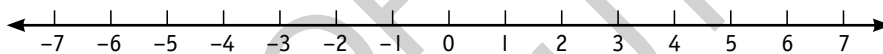
c $5 - 7 =$ _____



d $4 - 6 =$ _____



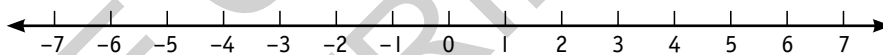
e $6 - 9 =$ _____



f $1 - 7 =$ _____



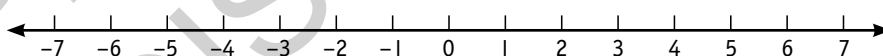
g $4 - 8 =$ _____



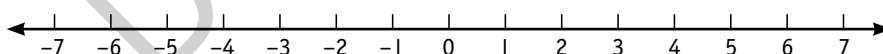
h $4 - 9 =$ _____



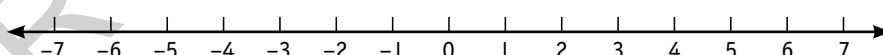
i $1 - 8 =$ _____



j $3 - 8 =$ _____



k $6 - 10 =$ _____



2 Evaluate:

a $2 - 8 =$ _____

b $2 - 4 =$ _____

c $3 - 5 =$ _____

d $4 - 10 =$ _____

e $4 - 7 =$ _____

f $5 - 10 =$ _____

g $1 - 6 =$ _____

h $7 - 10 =$ _____

i $3 - 4 =$ _____

j $2 - 6 =$ _____

k $2 - 9 =$ _____

l $1 - 5 =$ _____

m $1 - 3 =$ _____

n $5 - 8 =$ _____

o $2 - 3 =$ _____

p $2 - 10 =$ _____

q $5 - 6 =$ _____

r $7 - 9 =$ _____

3 Evaluate:

a $34 - 49 =$ _____

b $27 - 62 =$ _____

c $37 - 51 =$ _____

d $147 - 252 =$ _____

e $328 - 450 =$ _____

f $229 - 551 =$ _____

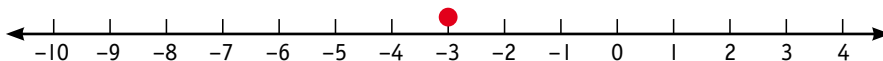
g $127 - 328 =$ _____

h $218 - 774 =$ _____

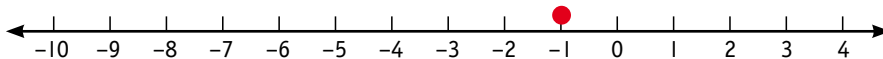
i $389 - 611 =$ _____

1 Evaluate the following:

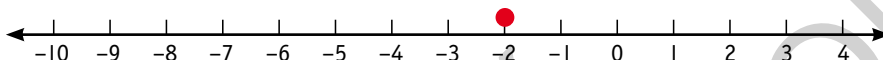
a $-3 - 4 =$ _____



b $-1 - 5 =$ _____



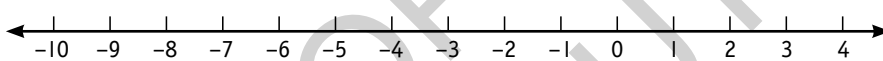
c $-2 - 3 =$ _____



d $-4 - 3 =$ _____



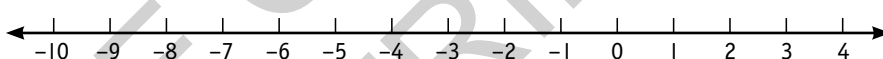
e $-2 - 5 =$ _____



f $-3 - 6 =$ _____



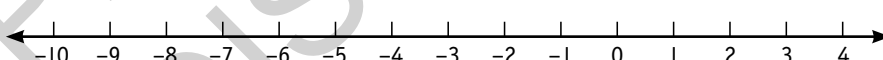
g $-2 - 6 =$ _____



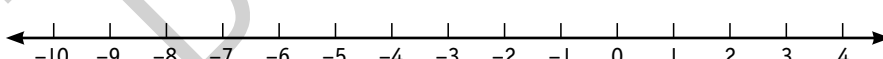
h $-5 - 2 =$ _____



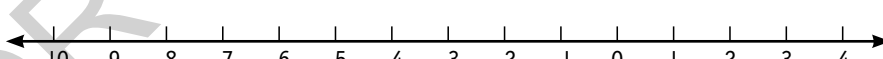
i $-4 - 2 =$ _____



j $-2 - 8 =$ _____



k $-3 - 3 =$ _____



2 Evaluate:

a $-2 - 4 =$ _____

b $-2 - 2 =$ _____

c $-1 - 3 =$ _____

d $-3 - 5 =$ _____

e $-3 - 1 =$ _____

f $-4 - 4 =$ _____

g $-4 - 5 =$ _____

h $-3 - 2 =$ _____

i $-1 - 4 =$ _____

j $-5 - 4 =$ _____

k $-5 - 3 =$ _____

l $-4 - 1 =$ _____

m $-1 - 2 =$ _____

n $-7 - 1 =$ _____

o $-1 - 1 =$ _____

p $-7 - 2 =$ _____

q $-8 - 4 =$ _____

r $-5 - 5 =$ _____

3 Evaluate:

a $34 - 49 =$ _____

b $-27 - 62 =$ _____

c $-57 - 31 =$ _____

d $-147 - 252 =$ _____

e $-328 - 450 =$ _____

f $-529 - 251 =$ _____

g $-427 - 328 =$ _____

h $-718 - 174 =$ _____

i $-389 - 611 =$ _____

1 Evaluate the following:

a $3 - (-4)$

$= 3 \boxed{+} 4$

$=$ _____

b $1 - (-6)$

$= 1 \boxed{+} 6$

$=$ _____

c $2 - (-4)$

$=$ _____ $\boxed{}$ _____

$=$ _____

d $5 - (-4)$

$=$ _____ $\boxed{}$ _____

$=$ _____

e $10 - (-3)$

$=$ _____

f $0 - (-5)$

$=$ _____

g $6 - (-4)$

$=$ _____

h $7 - (-6)$

$=$ _____

g $6 - (-4)$

$=$ _____

h $7 - (-6)$

$=$ _____

i $9 - (-7)$

$=$ _____

j $15 - (-4)$

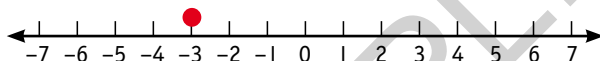
$=$ _____

2 Evaluate the following:

a $-3 - (-5)$

$= -3 \boxed{} 5$

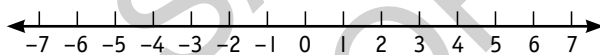
$=$ _____



b $-7 - (-8)$

$=$ _____

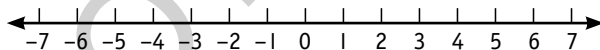
$=$ _____



c $-2 - (-4)$

$=$ _____

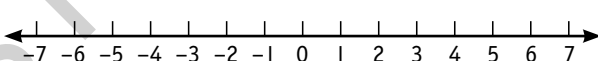
$=$ _____



d $-6 - (-4)$

$=$ _____

$=$ _____



e $-7 - (-3)$

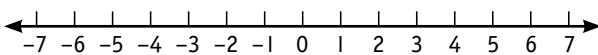
$=$ _____

$=$ _____

f $-5 - (-2)$

$=$ _____

$=$ _____



g $-4 - (-1)$

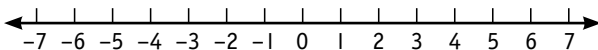
$=$ _____

$=$ _____

h $-6 - (-8)$

$=$ _____

$=$ _____



i $-7 - (-2)$

$=$ _____

$=$ _____

3 Evaluate:

a $34 - (-49) =$ _____

b $27 - (-62) =$ _____

c $57 - (-31) =$ _____

d $-34 - (-49) =$ _____

e $-27 - (-62) =$ _____

f $-57 - (-31) =$ _____

g $147 - (-252) =$ _____

h $328 - (-450) =$ _____

i $529 - (-251) =$ _____

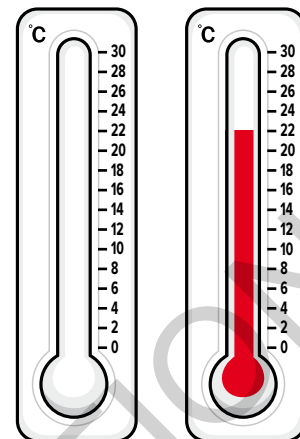
j $-147 - (-252) =$ _____

k $-328 - (-450) =$ _____

l $-529 - (-251) =$ _____

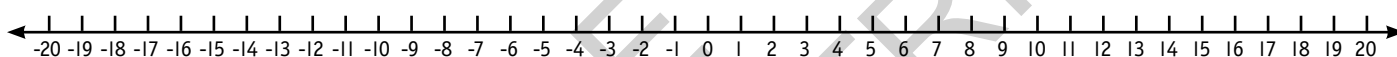
- 1 The temperature at midday was 20 degrees Celsius. During the afternoon, the temperature rose 4 degrees before falling 9 degrees in the late afternoon.

- Show the changes in temperature on the thermometer.
- Use the thermometer to find the overall change in temperature between the first and last readings?
- Write a number sentence to calculate the overall change in temperature between the first and last readings?



- 2 On Monday Ben's bank account showed $-\$2$. On Tuesday his mum deposited $\$10$. On Wednesday Ben spent $\$5$ on lunch. On Thursday he bought a book for $\$20$. On Friday Mr Lee transferred $\$30$ into Ben's account for mowing his lawn.

- Show the changes in Ben's bank balance on the number line.
- Use the number line to find the overall change in Ben's bank balance between Monday and Friday.



- Write a number sentence to calculate the overall change in Ben's bank balance between Monday and Friday?

- 3 Maria asked for 500 g of olives. After first weighing 575 g, the Deli owner took out 98 g, then added 46 g.

- Write a number sentence to calculate the mass of olives Maria ended up with.

- How many more olives did Maria get than she asked for? _____

- 4 Po left her car and hiked 20 km east to see a lake. She then hiked 35 km west to see a volcano and another 17 km west to see a waterfall.

- Write a number sentence to calculate how far she is from her car now.

- How far did Po hike altogether? _____

- 5 Jose is on holiday. On the first day he relaxed at his resort at sea level. On the second day he dived down 40 m to see a shipwreck. For the next 3 days he hiked up a mountain, gaining 260 m in elevation each day.

- Write a number sentence to calculate the total difference in elevation Jose experienced.

- On the sixth day he took a submarine ride down to 315 m.

Now what is the total difference in elevation? _____

Computations with integers

- Instructions**
- This part consists of 12 multiple-choice questions.
 - Fill in only ONE CIRCLE for each question.
 - Each question is worth 1 mark.
 - Calculators are NOT allowed.

Time allowed: 15 minutes

Total marks: 12

- | | | | | Marks | | |
|----|---|-----------------|--------------|----------------|-----------------|--------------------------|
| 1 | Which two integers are larger than -5 and smaller than 5 ? | (A) -3 | (B) 2 | (C) -6 | (D) 7 | ☐ |
| 2 | Which is the additive inverse of -8 ? | (A) -4 | (B) 4 | (C) -8 | (D) 8 | ☐ |
| 3 | Which integer makes this statement true? $-12 > ?$ | (A) -6 | (B) 6 | (C) -15 | (D) 15 | ☐ |
| 4 | Which is the largest integer? | (A) -37 | (B) 1 | (C) -9 | (D) -21 | ☐ |
| 5 | Which is the smallest integer? | (A) -7 | (B) 1 | (C) -3 | (D) 5 | ☐ |
| 6 | $-32 + 18$ equals | (A) 14 | (B) 50 | (C) -14 | (D) -50 | ☐ |
| 7 | $-6 + -3 + -1$ equals | (A) -8 | (B) -10 | (C) 10 | (D) 8 | ☐ |
| 8 | Which is NOT correct? | (A) $-29 > -17$ | (B) $-8 < 5$ | (C) $15 > -19$ | (D) $-13 < -11$ | ☐ |
| 9 | $-9 - -9$ equals | (A) 18 | (B) 0 | (C) 1 | (D) 81 | ☐ |
| 10 | $-5 - (6 - -1)$ equals | (A) -10 | (B) 12 | (C) -12 | (D) 0 | ☐ |
| 11 | Maia's hair was 122 cm long. She grew another 7 cm before cutting off 54 cm. What is Maia's hair length in the end? | (A) -61 cm | (B) 75 cm | (C) -47 cm | (D) 68 cm | ☐ |
| 12 | What is the overall change in Maia's hair length | (A) -61 cm | (B) 75 cm | (C) -47 cm | (D) 68 cm | ☐ |

Total marks achieved for PART A

12

Computations with integers

- Instructions**
- This part consists of 12 questions.
 - Each question is worth 1 mark.
 - Write only the answer in the answer column.
 - For any working use the question column. Calculators are NOT allowed.

Time allowed: 20 minutes

Total marks: 12

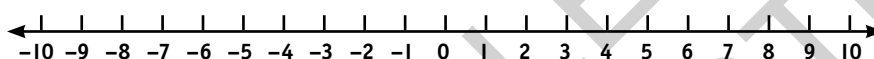
Questions

1 Write all the integers larger than -8 and smaller than -1 .

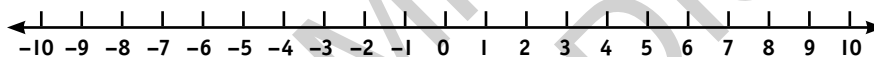
2 Write these integers from smallest to largest: $5, -22, 0, -7, 12$.

3 Write the additive inverse of 35 .

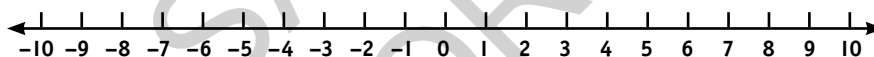
4 Plot these integers on the number line: $-8, 7, -2, 5$.



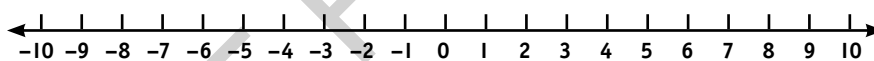
5 Represent on the number line and write the answer: $9 - 13 =$



6 Represent on the number line and write the answer: $-7 + 10 =$



7 Represent on the number line and write the answer: $-2 - 6 =$



8 $-7 + -9 =$

9 What is the sum of -3 and -8 ?

10 What number is 13 more than -25 ?

11 $8 + (-3) + 3 - 8 =$

12 $-5 + 7 - 8 =$

Answers

Marks

1

1

1

1

1

1

1

1

1

1

1

1

Total marks achieved for PART B

12

Chapter 3 Fractions

Fractions

Fractions are used when we share, measure and compare parts of a whole — for example:

- dividing food or quantities
- measuring length, time or ingredients
- understanding proportions and ratios

They help us describe quantities that are not whole numbers.



Key ideas

✓ Fractions

A fraction describes a proportional relationship between two amounts.

$\frac{3}{4}$ represents the proportion of 3 divided by 4.

✓ Equivalent fractions

Different fractions can represent the same value. $\frac{1}{2} = \frac{4}{8} = \frac{6}{12} = \frac{50}{100}$

✓ Simplifying fractions

Write fractions in their simplest form.

$$\frac{6}{8} = \frac{3}{4}$$

✓ Comparing fractions

Fractions can be compared using common denominators or number lines.

✓ Adding and subtracting fractions

Fractions must have the same denominator.

$$\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$$

✓ Multiplying fractions

Multiply the whole number by the numerator and keep the denominator the same.

$$4 \times \frac{2}{9} = \frac{8}{9}$$

✓ Dividing fractions

How many of the fraction fit into the whole.

$$3 \div \frac{1}{4} = 12$$

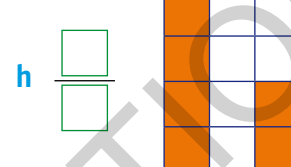
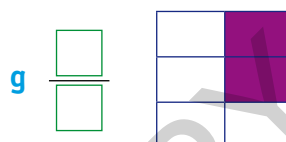
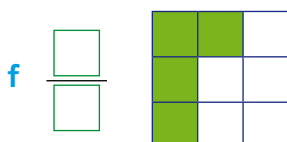
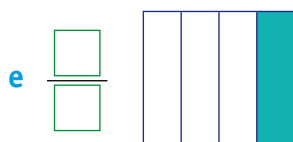
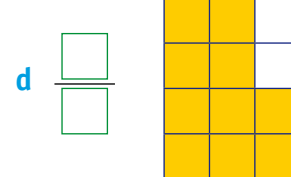
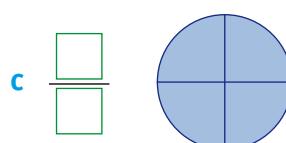
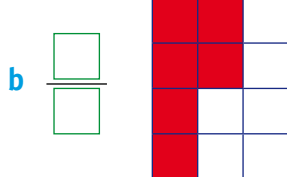
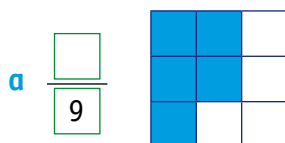
By the end of this chapter, you will be able to:

- represent and interpret fractions
- find equivalent and simplified fractions
- compare and order fractions
- add, subtract, multiply and divide fractions
- solve real-world problems involving fractions

The New Zealand Curriculum Mathematics and Statistics 2025

Knowledge	Practices
Number	Number Structures and Operations
A fraction can describe a proportional relationship between two amounts.	Identifying, reading, writing and representing fractions
Every fraction can be represented by an infinite set of equivalent fractions that occupy the same point on the number line.	Comparing, ordering and converting between fractions
In the simplest form of a fraction, the numerator and denominator do not share a common factor.	Finding equivalent fractions and representing fractions in their simplest form
Multiplying a whole number by a fraction and finding that fraction of that whole number have the same result.	Adding and subtracting fractions, including improper fractions and mixed numbers, and representing the answer in its simplest form
	Multiplying whole numbers by fractions and representing the answer in its simplest form
	Dividing fractions by whole numbers and representing the answer in its simplest form
	Dividing a whole number by a unit fraction
	Finding a fraction of a whole number (e.g. 5—3 of 186)
	Finding a whole amount when given a fraction (e.g. 5—4 of the set is 85, what is the whole set?)

1 What fraction of each shape has been shaded?



2 Write the fractions above in words.

- a _____
- b _____
- c _____
- d _____
- e _____
- f _____
- g _____
- h _____

3 A student claims this diagram shows $\frac{1}{4}$. Why are they incorrect?



4 a A sports club reports that $\frac{5}{6}$ of its members are registered to play.
What fraction of the members are not registered? _____

Explain how you know. _____

b A school survey shows that $\frac{3}{8}$ of the students walk to school.
In this context, what does the number 8 represent? And what does the number 3 represent?

c If you eat $\frac{1}{2}$ of a large pizza, and your friend eats $\frac{1}{2}$ of a small pizza, you both ate the same amount of food. True or False? _____

Explain your reasoning. _____

Compare and order fractions

Chapter 3 Fractions

1 Are these statements true or false? Write true or false.

a $\frac{1}{3} < \frac{1}{2}$

b $\frac{1}{4} > \frac{2}{6}$

c $\frac{1}{2} > \frac{1}{3}$

d $\frac{1}{4} < \frac{5}{12}$

e $\frac{3}{4} > \frac{7}{12}$

f $\frac{2}{3} > \frac{3}{4}$

g $\frac{7}{12} > \frac{1}{4}$

h $\frac{3}{12} > \frac{1}{6}$

2 Rewrite the false statements from above with the correct symbol.

a _____

b _____



3 Compare these fractions. Write < or >.

a $\frac{1}{2} \square \frac{2}{8}$

b $\frac{4}{8} \square \frac{3}{4}$

c $\frac{2}{6} \square \frac{1}{2}$

d $\frac{10}{12} \square \frac{3}{4}$

4 Order these fractions from smallest to largest fraction.

a $\frac{1}{2} \quad \frac{1}{4} \quad \frac{1}{3}$

b $\frac{3}{6} \quad \frac{1}{2} \quad \frac{1}{3}$

c $\frac{1}{3} \quad \frac{1}{4} \quad \frac{1}{6}$

d $\frac{1}{2} \quad \frac{2}{3} \quad \frac{3}{9}$

e $\frac{2}{5} \quad \frac{1}{2} \quad \frac{1}{3}$

f $\frac{3}{4} \quad \frac{2}{3} \quad \frac{4}{8}$

g $\frac{3}{4} \quad \frac{3}{6} \quad \frac{3}{8}$

h $\frac{3}{8} \quad \frac{2}{4} \quad \frac{5}{6}$

i $\frac{4}{7} \quad \frac{1}{2} \quad \frac{11}{14}$

j $\frac{1}{3} \quad \frac{5}{8} \quad \frac{4}{6}$

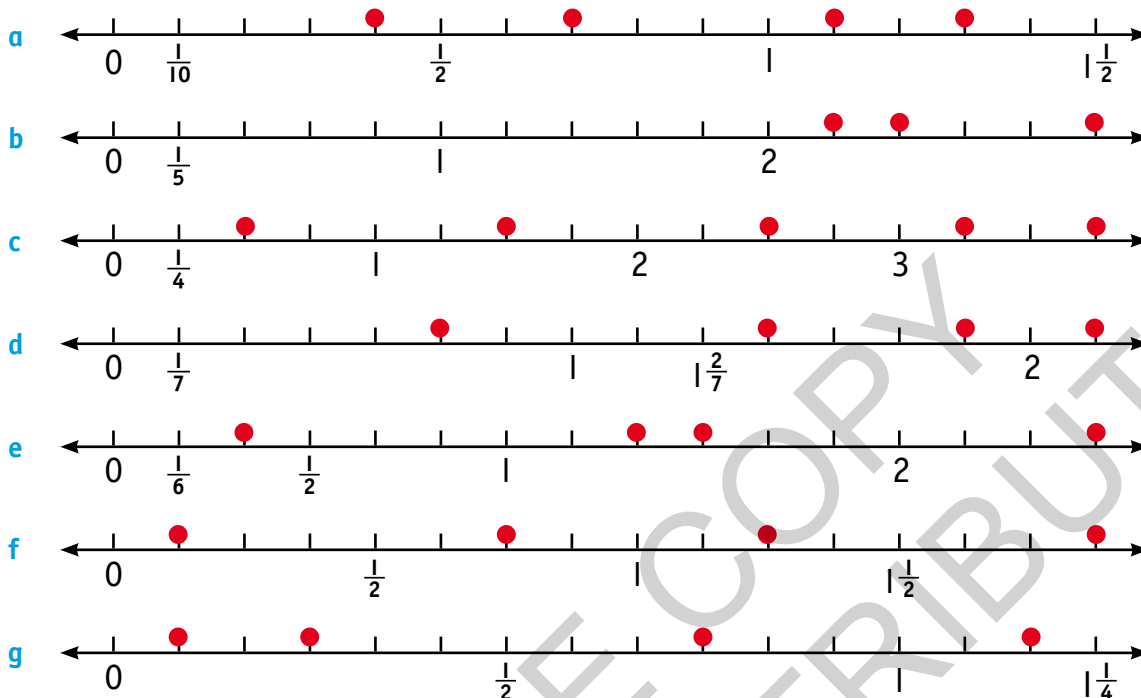
k $\frac{3}{4} \quad \frac{2}{3} \quad \frac{1}{2}$

l $\frac{5}{6} \quad \frac{7}{12} \quad \frac{9}{10}$

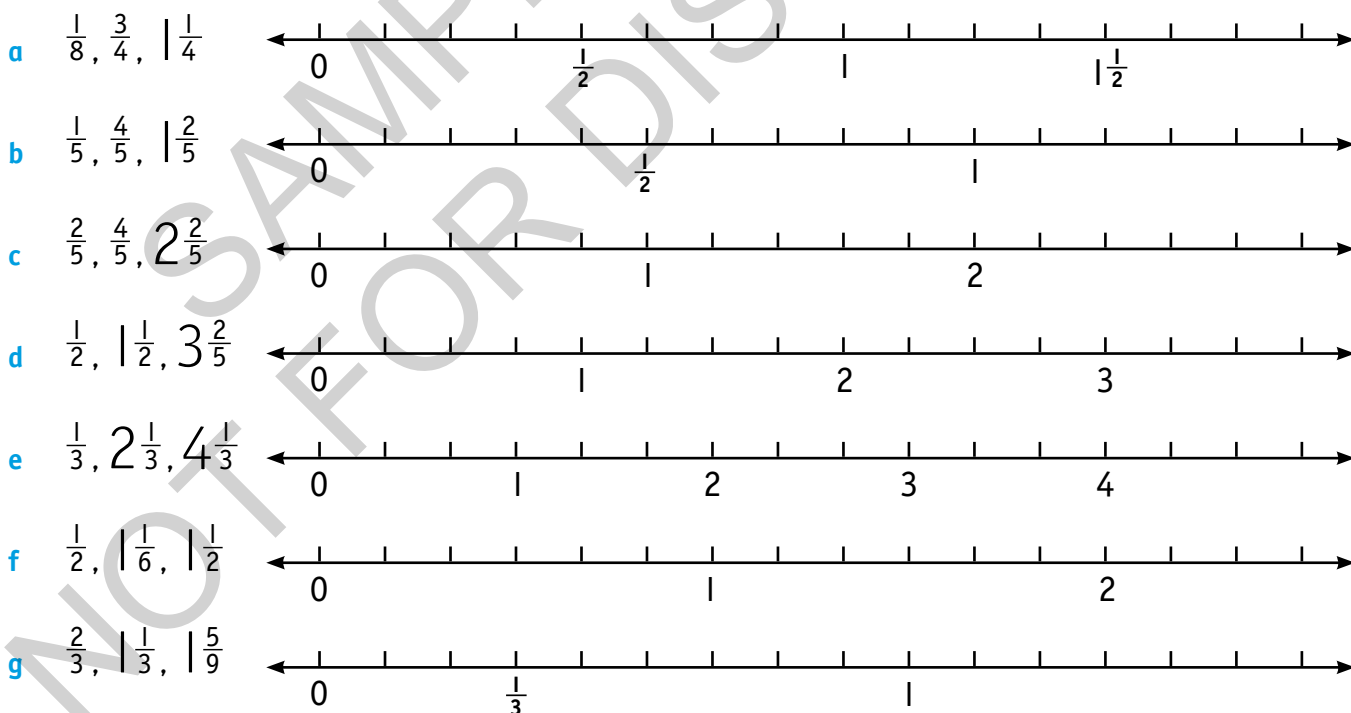
5 Order the fractions from largest to smallest.

$\frac{3}{4} \quad \frac{2}{3} \quad \frac{7}{8} \quad \frac{5}{6} \quad \frac{4}{5} \quad \frac{7}{10}$

1 Write the correct fractions beneath the positions that are marked on each number line.

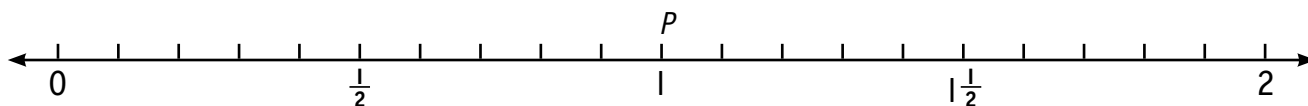


2 Graph the following sets of fractions on the number line.



3 Find the position of P if it moves

- | | | |
|-------------------------|-------------------------|-------------------------|
| a 2 places to the right | b 4 places to the right | c 3 places to the left |
| d 6 places to the left | e 8 places to the left | f 7 places to the right |



Equivalent fractions have the same value but different denominators.
Use **multiplication** and **division** to make equivalent fractions. Remember:

What we do to the **numerator**, we do to the **denominator**.

What we do to the **denominator**, we do to the **numerator**.

$$\frac{3 \times 5}{8 \times 5} = \frac{15}{40} \quad \frac{12 \div 4}{16 \div 4} = \frac{3}{4}$$

1 Complete each set of equivalent fractions:

a $\frac{1}{2} = \frac{\square}{4}$

b $\frac{2}{3} = \frac{\square}{6}$

c $\frac{5}{4} = \frac{\square}{8}$

d $\frac{6}{5} = \frac{\square}{10}$

e $\frac{1}{2} = \frac{\square}{6}$

f $\frac{2}{3} = \frac{\square}{9}$

g $\frac{5}{4} = \frac{\square}{12}$

h $\frac{6}{5} = \frac{\square}{15}$

i $\frac{4}{6} = \frac{\square}{12}$

j $\frac{3}{4} = \frac{\square}{8}$

k $\frac{4}{6} = \frac{\square}{18}$

l $\frac{3}{4} = \frac{\square}{12}$

m $\frac{1}{2} = \frac{\square}{8}$

n $\frac{2}{3} = \frac{\square}{12}$

o $\frac{5}{4} = \frac{\square}{16}$

p $\frac{6}{5} = \frac{\square}{20}$

q $\frac{4}{6} = \frac{\square}{24}$

r $\frac{3}{4} = \frac{\square}{16}$

s $\frac{4}{6} = \frac{\square}{30}$

t $\frac{3}{4} = \frac{\square}{20}$

u $\frac{1}{2} = \frac{\square}{10}$

v $\frac{2}{3} = \frac{\square}{15}$

w $\frac{5}{4} = \frac{\square}{20}$

x $\frac{6}{5} = \frac{\square}{25}$

2 Complete each set of equivalent fractions:

a $\frac{4}{8} = \frac{\square}{2}$

b $\frac{4}{6} = \frac{\square}{3}$

c $\frac{10}{8} = \frac{\square}{4}$

d $\frac{12}{10} = \frac{\square}{5}$

e $\frac{6}{9} = \frac{\square}{3}$

f $\frac{3}{9} = \frac{\square}{3}$

g $\frac{15}{12} = \frac{\square}{4}$

h $\frac{21}{15} = \frac{\square}{5}$

i $\frac{8}{12} = \frac{\square}{6}$

j $\frac{6}{8} = \frac{\square}{4}$

k $\frac{45}{40} = \frac{\square}{8}$

l $\frac{60}{20} = \frac{\square}{4}$

m $\frac{8}{16} = \frac{\square}{4}$

n $\frac{12}{24} = \frac{\square}{6}$

o $\frac{24}{32} = \frac{\square}{8}$

p $\frac{28}{40} = \frac{\square}{10}$

q $\frac{9}{18} = \frac{\square}{6}$

r $\frac{15}{12} = \frac{\square}{4}$

s $\frac{12}{28} = \frac{\square}{7}$

t $\frac{24}{20} = \frac{\square}{5}$

u $\frac{15}{20} = \frac{\square}{4}$

v $\frac{25}{15} = \frac{\square}{3}$

w $\frac{10}{20} = \frac{\square}{4}$

x $\frac{35}{25} = \frac{\square}{5}$

1 Complete each set of equivalent fractions:

a $\frac{2}{6} = \frac{4}{\square}$

b $\frac{5}{8} = \frac{10}{\square}$

c $\frac{7}{9} = \frac{14}{\square}$

d $\frac{3}{10} = \frac{6}{\square}$

e $\frac{3}{6} = \frac{9}{\square}$

f $\frac{5}{8} = \frac{15}{\square}$

g $\frac{7}{9} = \frac{21}{\square}$

h $\frac{3}{10} = \frac{9}{\square}$

i $\frac{8}{5} = \frac{16}{\square}$

j $\frac{9}{7} = \frac{18}{\square}$

k $\frac{8}{5} = \frac{24}{\square}$

l $\frac{9}{7} = \frac{27}{\square}$

m $\frac{3}{6} = \frac{12}{\square}$

n $\frac{5}{8} = \frac{20}{\square}$

o $\frac{7}{9} = \frac{28}{\square}$

p $\frac{3}{10} = \frac{12}{\square}$

q $\frac{8}{5} = \frac{40}{\square}$

r $\frac{9}{7} = \frac{45}{\square}$

s $\frac{8}{5} = \frac{32}{\square}$

t $\frac{9}{7} = \frac{36}{\square}$

u $\frac{3}{6} = \frac{15}{\square}$

v $\frac{5}{8} = \frac{25}{\square}$

w $\frac{7}{9} = \frac{35}{\square}$

x $\frac{3}{10} = \frac{15}{\square}$

2 Complete each set of equivalent fractions:

a $\frac{9}{24} = \frac{3}{\square}$

b $\frac{15}{27} = \frac{5}{\square}$

c $\frac{21}{30} = \frac{7}{\square}$

d $\frac{9}{33} = \frac{3}{\square}$

e $\frac{4}{12} = \frac{2}{\square}$

f $\frac{10}{16} = \frac{5}{\square}$

g $\frac{24}{18} = \frac{8}{\square}$

h $\frac{27}{24} = \frac{9}{\square}$

i $\frac{36}{32} = \frac{9}{\square}$

j $\frac{28}{36} = \frac{7}{\square}$

k $\frac{16}{10} = \frac{8}{\square}$

l $\frac{18}{14} = \frac{9}{\square}$

m $\frac{16}{32} = \frac{4}{\square}$

n $\frac{24}{20} = \frac{6}{\square}$

o $\frac{32}{40} = \frac{8}{\square}$

p $\frac{16}{44} = \frac{4}{\square}$

q $\frac{35}{50} = \frac{7}{\square}$

r $\frac{15}{35} = \frac{3}{\square}$

s $\frac{40}{5} = \frac{8}{\square}$

t $\frac{45}{15} = \frac{9}{\square}$

u $\frac{10}{30} = \frac{2}{\square}$

v $\frac{25}{40} = \frac{5}{\square}$

w $\frac{14}{18} = \frac{7}{\square}$

x $\frac{6}{20} = \frac{3}{\square}$

3 Write two equivalent fractions.

a $\frac{4}{5} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b $\frac{6}{12} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

c $\frac{5}{8} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

d $\frac{8}{20} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

e $\frac{11}{12} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

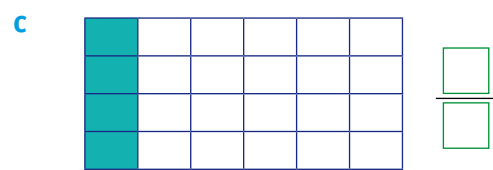
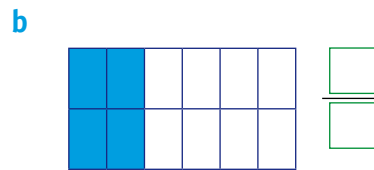
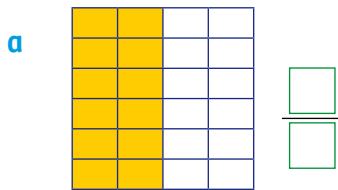
f $\frac{8}{24} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

g $\frac{8}{18} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

h $\frac{24}{36} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

i $\frac{5}{9} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

1 Write each fraction in its simplest form.



Divide the **numerator** and **denominator** by their highest common factor (HCF).
In simplest form, a fraction's numerator and denominator have only 1 as a common factor.

Factors of 27: 1, 3, 9, 27

Factors of 45: 1, 3, 5, 9, 15, 45

$$\frac{27 \div 9}{45 \div 9} = \frac{3}{5}$$

2 Find the HCF for the numerator and denominator, then use it to write the fraction in simplest form.

a $\frac{16}{24}$ Factors of 16: _____ Factors of 24: _____ HCF = _____ $\frac{16}{24} = \frac{\quad}{\quad}$

b $\frac{27}{45}$ Factors of 27: _____ Factors of 45: _____ HCF = _____ $\frac{27}{45} = \frac{\quad}{\quad}$

c $\frac{36}{42}$ HCF = _____ $\frac{36}{42} = \frac{\quad}{\quad}$ d $\frac{42}{56}$ HCF = _____ $\frac{42}{56} = \frac{\quad}{\quad}$

e $\frac{45}{75}$ HCF = _____ $\frac{45}{75} = \frac{\quad}{\quad}$ f $\frac{54}{72}$ HCF = _____ $\frac{54}{72} = \frac{\quad}{\quad}$

3 Simplify the following fractions:

a $\frac{24}{27} = \frac{\quad}{\quad}$ b $\frac{9}{30} = \frac{\quad}{\quad}$ c $\frac{40}{55} = \frac{\quad}{\quad}$ d $\frac{36}{30} = \frac{\quad}{\quad}$

e $\frac{24}{30} = \frac{\quad}{\quad}$ f $\frac{36}{42} = \frac{\quad}{\quad}$ g $\frac{20}{32} = \frac{\quad}{\quad}$ h $\frac{28}{32} = \frac{\quad}{\quad}$

i $\frac{5}{45} = \frac{\quad}{\quad}$ j $\frac{21}{28} = \frac{\quad}{\quad}$ k $\frac{24}{32} = \frac{\quad}{\quad}$ l $\frac{27}{36} = \frac{\quad}{\quad}$

4 Simplify these improper fractions into whole numbers.

a $\frac{36}{9} = \frac{\quad}{\quad}$ b $\frac{49}{7} = \frac{\quad}{\quad}$ c $\frac{24}{8} = \frac{\quad}{\quad}$ d $\frac{8}{8} = \frac{\quad}{\quad}$

5 Simplify these improper fractions into mixed numbers in their simplest form.

a $\frac{42}{12} = \frac{\quad}{\quad}$ b $\frac{84}{9} = \frac{\quad}{\quad}$ c $\frac{48}{18} = \frac{\quad}{\quad}$ d $\frac{100}{35} = \frac{\quad}{\quad}$

1 Evaluate the following:

a $\frac{4}{9} + \frac{1}{9} = \frac{\boxed{}}{\boxed{}}$

b $\frac{3}{10} + \frac{4}{10} = \frac{\boxed{}}{\boxed{}}$

c $\frac{2}{5} + \frac{2}{5} = \frac{\boxed{}}{\boxed{}}$

d $\frac{1}{5} + \frac{3}{5} = \frac{\boxed{}}{\boxed{}}$

e $\frac{3}{6} + \frac{2}{6} = \frac{\boxed{}}{\boxed{}}$

f $\frac{2}{7} + \frac{4}{7} = \frac{\boxed{}}{\boxed{}}$

g $\frac{1}{7} + \frac{5}{7} = \frac{\boxed{}}{\boxed{}}$

h $\frac{3}{8} + \frac{2}{8} = \frac{\boxed{}}{\boxed{}}$

2 Add and simplify the following fractions:

a $\frac{1}{4} + \frac{1}{4} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

b $\frac{1}{6} + \frac{3}{6} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

c $\frac{1}{8} + \frac{1}{8} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

d $\frac{1}{8} + \frac{5}{8} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

e $\frac{1}{10} + \frac{5}{10} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

f $\frac{3}{10} + \frac{5}{10} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

g $\frac{5}{12} + \frac{5}{12} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

h $\frac{8}{14} + \frac{4}{14} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

i $\frac{15}{24} + \frac{5}{24} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

j $\frac{20}{32} + \frac{8}{32} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

k $\frac{12}{28} + \frac{4}{28} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

l $\frac{15}{36} + \frac{5}{36} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

3 Evaluate the following:

a $\frac{3}{4} - \frac{1}{4} = \frac{\boxed{}}{\boxed{}}$

b $\frac{4}{5} - \frac{2}{5} = \frac{\boxed{}}{\boxed{}}$

c $\frac{4}{6} - \frac{3}{6} = \frac{\boxed{}}{\boxed{}}$

d $\frac{7}{8} - \frac{3}{8} = \frac{\boxed{}}{\boxed{}}$

e $\frac{8}{9} - \frac{4}{9} = \frac{\boxed{}}{\boxed{}}$

f $\frac{9}{10} - \frac{5}{10} = \frac{\boxed{}}{\boxed{}}$

g $\frac{11}{12} - \frac{6}{12} = \frac{\boxed{}}{\boxed{}}$

h $\frac{18}{20} - \frac{6}{20} = \frac{\boxed{}}{\boxed{}}$

4 Subtract and simplify the following fractions:

a $\frac{4}{9} - \frac{1}{9} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

b $\frac{8}{9} - \frac{2}{9} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

c $\frac{9}{15} - \frac{3}{15} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

d $\frac{13}{15} - \frac{4}{15} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

e $\frac{11}{21} - \frac{2}{21} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

f $\frac{18}{27} - \frac{3}{27} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

g $\frac{20}{21} - \frac{2}{21} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

h $\frac{5}{30} - \frac{2}{30} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

i $\frac{26}{32} - \frac{12}{32} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

j $\frac{33}{36} - \frac{15}{36} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

k $\frac{18}{40} - \frac{6}{40} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

l $\frac{29}{35} - \frac{14}{35} = \frac{\boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

1 Add the following fractions:

a $\frac{1}{2} + \frac{1}{4}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{1}{4}$$

$$= \frac{\boxed{}}{4}$$

b $\frac{1}{2} + \frac{2}{6}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{2}{6}$$

$$= \frac{\boxed{}}{6}$$

c $\frac{2}{3} + \frac{1}{6}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{1}{6}$$

$$= \frac{\boxed{}}{6}$$

d $\frac{1}{3} + \frac{1}{9}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{1}{9}$$

$$= \frac{\boxed{}}{9}$$

e $\frac{1}{4} + \frac{1}{8}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{1}{8}$$

$$= \frac{\boxed{}}{8}$$

f $\frac{2}{3} + \frac{2}{6}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{2}{6}$$

$$= \frac{\boxed{}}{6}$$

g $\frac{3}{4} + \frac{1}{8}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{1}{8}$$

$$= \frac{\boxed{}}{8}$$

h $\frac{2}{3} + \frac{2}{9}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{2}{9}$$

$$= \frac{\boxed{}}{9}$$

i $\frac{1}{2} + \frac{1}{8}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{1}{8}$$

$$= \frac{\boxed{}}{8}$$

j $\frac{1}{2} + \frac{4}{10}$

$$= \frac{\boxed{}}{\boxed{}} + \frac{4}{10}$$

$$= \frac{\boxed{}}{10}$$

Change fractions with different denominators into equivalent fractions with the **same** denominator, then add.

Remember: What we do to the **denominator**, we do to the **numerator**.

$$\frac{1}{5} + \frac{18}{30} = \frac{6}{30} + \frac{18}{30} = \frac{24}{30}$$

2 Add the following fractions:

a $\frac{1}{7} + \frac{1}{14} =$ _____

b $\frac{3}{4} + \frac{2}{12} =$ _____

c $\frac{2}{7} + \frac{1}{21} =$ _____

d $\frac{1}{5} + \frac{1}{15} =$ _____

e $\frac{1}{3} + \frac{5}{15} =$ _____

f $\frac{1}{6} + \frac{4}{12} =$ _____

g $\frac{5}{8} + \frac{3}{16} =$ _____

h $\frac{3}{6} + \frac{4}{18} =$ _____

i $\frac{4}{9} + \frac{5}{18} =$ _____

j $\frac{1}{2} + \frac{5}{18} =$ _____

k $\frac{3}{10} + \frac{11}{20} =$ _____

l $\frac{1}{4} + \frac{5}{20} =$ _____

m $\frac{2}{5} + \frac{2}{10} =$ _____

n $\frac{12}{18} + \frac{1}{9} =$ _____

3 Add. Write the answer as a mixed number.

a $\frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \frac{5}{6} =$ _____

b $\frac{1}{3} + \frac{3}{6} + \frac{5}{9} + \frac{1}{2} =$ _____

c $\frac{1}{5} + \frac{7}{10} + \frac{2}{3} + \frac{9}{15} =$ _____

1 Subtract the following fractions:

a $\frac{1}{2} - \frac{1}{4}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{1}{4}$$

$$= \frac{\boxed{}}{4}$$

a $\frac{1}{2} - \frac{2}{6}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{2}{6}$$

$$= \frac{\boxed{}}{6}$$

b $\frac{2}{3} - \frac{3}{6}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{3}{6}$$

$$= \frac{\boxed{}}{6}$$

b $\frac{1}{3} - \frac{1}{9}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{1}{9}$$

$$= \frac{\boxed{}}{9}$$

c $\frac{1}{2} - \frac{1}{8}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{1}{8}$$

$$= \frac{\boxed{}}{8}$$

c $\frac{2}{3} - \frac{4}{9}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{4}{9}$$

$$= \frac{\boxed{}}{9}$$

d $\frac{3}{4} - \frac{3}{8}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{3}{8}$$

$$= \frac{\boxed{}}{8}$$

d $\frac{3}{4} - \frac{5}{8}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{5}{8}$$

$$= \frac{\boxed{}}{8}$$

i $\frac{1}{2} - \frac{3}{10}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{3}{10}$$

$$= \frac{\boxed{}}{10}$$

j $\frac{1}{5} - \frac{1}{10}$

$$= \frac{\boxed{}}{\boxed{}} - \frac{1}{10}$$

$$= \frac{\boxed{}}{10}$$

Change fractions with different denominators into equivalent fractions with the **same** denominator, then subtract. Remember: What we do to the **denominator**, we do to the **numerator**.

$$\frac{3}{4} - \frac{8}{16} = \frac{3}{4} - \frac{2}{4} = \frac{1}{4}$$

2 Subtract the following fractions:

a $\frac{3}{5} - \frac{5}{10} =$ _____

b $\frac{3}{4} - \frac{2}{12} =$ _____

c $\frac{5}{6} - \frac{3}{12} =$ _____

d $\frac{1}{5} - \frac{1}{15} =$ _____

e $\frac{5}{8} - \frac{3}{16} =$ _____

f $\frac{7}{9} - \frac{7}{27} =$ _____

g $\frac{3}{5} - \frac{6}{15} =$ _____

h $\frac{9}{11} - \frac{10}{33} =$ _____

i $\frac{8}{9} - \frac{5}{18} =$ _____

j $\frac{5}{7} - \frac{4}{21} =$ _____

k $\frac{6}{10} - \frac{5}{30} =$ _____

l $\frac{6}{10} - \frac{5}{30} =$ _____

m $\frac{7}{10} - \frac{3}{20} =$ _____

n $\frac{4}{5} - \frac{11}{20} =$ _____

3 Subtract. Write the answer as a mixed number.

a $2\frac{1}{2} - \frac{3}{8} - \frac{3}{4} =$ _____

b $1\frac{3}{4} - \frac{1}{6} - \frac{7}{12} =$ _____

c $3\frac{2}{3} - \frac{3}{6} - \frac{7}{9} =$ _____

Multiply the two denominators together for a **new denominator**.
Make the equivalent fractions: what we do to the **denominator**, we do to the **numerator**.
Then add or subtract the **numerators**.

$$\frac{3}{4} - \frac{5}{7} = \frac{21}{28} - \frac{20}{28} = \frac{1}{28}$$

1 Evaluate the following:

a $\frac{2}{3} + \frac{1}{5} = \frac{\boxed{10} + \boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

b $\frac{1}{3} + \frac{1}{4} = \frac{\boxed{4} + \boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

c $\frac{1}{2} + \frac{1}{3} = \frac{\boxed{} + \boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

d $\frac{2}{3} + \frac{1}{2} = \underline{\hspace{2cm}}$

e $\frac{2}{3} + \frac{1}{4} = \underline{\hspace{2cm}}$

f $\frac{2}{5} + \frac{1}{3} = \underline{\hspace{2cm}}$

g $\frac{2}{7} + \frac{1}{4} = \underline{\hspace{2cm}}$

h $\frac{3}{4} + \frac{1}{3} = \underline{\hspace{2cm}}$

i $\frac{3}{7} + \frac{1}{4} = \underline{\hspace{2cm}}$

j $\frac{3}{5} + \frac{1}{3} = \underline{\hspace{2cm}}$

k $\frac{4}{7} + \frac{1}{2} = \underline{\hspace{2cm}}$

l $\frac{5}{6} + \frac{2}{7} = \underline{\hspace{2cm}}$

m $\frac{2}{5} + \frac{3}{8} = \underline{\hspace{2cm}}$

2 Evaluate the following:

a $\frac{2}{3} - \frac{1}{2} = \frac{\boxed{} - \boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

b $\frac{2}{5} - \frac{1}{3} = \frac{\boxed{} - \boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

c $\frac{2}{7} - \frac{1}{4} = \frac{\boxed{} - \boxed{}}{\boxed{}} = \frac{\boxed{}}{\boxed{}}$

d $\frac{2}{3} - \frac{1}{5} = \underline{\hspace{2cm}}$

e $\frac{4}{5} - \frac{1}{6} = \underline{\hspace{2cm}}$

f $\frac{5}{6} - \frac{1}{5} = \underline{\hspace{2cm}}$

g $\frac{5}{8} - \frac{1}{3} = \underline{\hspace{2cm}}$

h $\frac{3}{8} - \frac{2}{7} = \underline{\hspace{2cm}}$

i $\frac{4}{5} - \frac{4}{9} = \underline{\hspace{2cm}}$

j $\frac{5}{8} - \frac{3}{7} = \underline{\hspace{2cm}}$

k $\frac{7}{9} - \frac{3}{5} = \underline{\hspace{2cm}}$

l $\frac{8}{9} - \frac{4}{5} = \underline{\hspace{2cm}}$

m $\frac{7}{8} - \frac{3}{5} = \underline{\hspace{2cm}}$

3 Evaluate the following:

a $\frac{11}{12} - \frac{3}{6} + \frac{1}{3} = \underline{\hspace{2cm}}$

b $\frac{7}{15} + \frac{2}{5} - \frac{1}{3} = \underline{\hspace{2cm}}$

1 Work out the addition or subtraction of the following fractions.

- a $\frac{1}{2} + \frac{1}{6} =$ _____ b $\frac{1}{4} + \frac{1}{20} =$ _____ c $\frac{1}{5} + \frac{3}{4} =$ _____
 d $\frac{1}{2} - \frac{1}{4} =$ _____ e $\frac{1}{3} - \frac{1}{6} =$ _____ f $\frac{2}{3} - \frac{1}{6} =$ _____
 g $\frac{1}{2} + \frac{1}{3} =$ _____ h $\frac{1}{3} + \frac{1}{4} =$ _____ i $\frac{1}{5} + \frac{1}{7} =$ _____
 j $\frac{1}{3} - \frac{1}{4} =$ _____ k $\frac{1}{5} - \frac{1}{12} =$ _____ l $\frac{1}{4} - \frac{1}{8} =$ _____

2 Evaluate the following:

- a $\frac{5}{11} + \frac{3}{8} =$ _____ b $\frac{8}{11} + \frac{2}{5} =$ _____ c $\frac{2}{11} - \frac{1}{9} =$ _____
 d $\frac{4}{7} - \frac{3}{10} =$ _____ e $\frac{7}{10} + \frac{2}{9} =$ _____ f $\frac{3}{10} + \frac{2}{7} =$ _____
 g $\frac{9}{10} - \frac{5}{7} =$ _____ h $\frac{2}{11} - \frac{1}{10} =$ _____ i $\frac{7}{10} + \frac{3}{11} =$ _____
 j $\frac{8}{9} - \frac{2}{11} =$ _____ k $\frac{3}{11} + \frac{4}{9} =$ _____ l $\frac{6}{7} - \frac{7}{11} =$ _____

3 What is the sum of $\frac{1}{4}$ and $\frac{2}{5}$?

$$\frac{1}{4} + \frac{2}{5} =$$

4 Increase $\frac{3}{5}$ by $\frac{2}{7}$.

5 What is the total of $\frac{9}{11}$ and $\frac{1}{6}$?

6 What is the difference between $\frac{2}{5}$ and $\frac{1}{6}$?

7 Decrease $\frac{8}{9}$ by $\frac{1}{7}$.

8 Subtract $\frac{1}{3}$ from $\frac{3}{5}$.

9 Maya is making a fruit punch for her birthday party. She pours $\frac{1}{2}$ of a litre of orange juice and $\frac{1}{3}$ of a litre of pineapple juice into a pitcher. What is the total volume of juice in the pitcher?

10 Liam has a plank of wood that is $\frac{3}{4}$ of a metre long. He cuts off a piece measuring $\frac{1}{8}$ of a metre to build a birdhouse. How much of the wooden plank does Liam have left?

1 State whether each fraction is improper, proper or a mixed numeral.

a $1\frac{3}{4}$ _____

b $3\frac{5}{6}$ _____

c $\frac{3}{5}$ _____

d $\frac{8}{5}$ _____

e $\frac{7}{6}$ _____

f $\frac{11}{20}$ _____

2 Convert each mixed numeral to an improper fraction:

a $1\frac{2}{3} = \frac{\boxed{}}{\boxed{}}$

b $1\frac{4}{7} = \frac{\boxed{}}{\boxed{}}$

c $2\frac{2}{3} = \frac{\boxed{}}{\boxed{}}$

d $2\frac{3}{4} = \frac{\boxed{}}{\boxed{}}$

e $3\frac{1}{2} = \frac{\boxed{}}{\boxed{}}$

f $3\frac{2}{7} = \frac{\boxed{}}{\boxed{}}$

g $4\frac{3}{5} = \frac{\boxed{}}{\boxed{}}$

h $4\frac{1}{9} = \frac{\boxed{}}{\boxed{}}$

i $5\frac{2}{5} = \frac{\boxed{}}{\boxed{}}$

j $5\frac{6}{7} = \frac{\boxed{}}{\boxed{}}$

k $6\frac{1}{8} = \frac{\boxed{}}{\boxed{}}$

l $7\frac{4}{7} = \frac{\boxed{}}{\boxed{}}$

m $8\frac{5}{6} = \frac{\boxed{}}{\boxed{}}$

n $9\frac{1}{8} = \frac{\boxed{}}{\boxed{}}$

o $7\frac{3}{6} = \frac{\boxed{}}{\boxed{}}$

p $6\frac{5}{7} = \frac{\boxed{}}{\boxed{}}$

3 Convert each improper fraction to a mixed numeral:

a $\frac{5}{3} = 1\frac{\boxed{}}{\boxed{}}$

b $\frac{3}{2} = 1\frac{\boxed{}}{\boxed{}}$

c $\frac{7}{4} = 1\frac{\boxed{}}{\boxed{}}$

d $\frac{11}{8} = 1\frac{\boxed{}}{\boxed{}}$

e $\frac{10}{7} = 1\frac{\boxed{}}{\boxed{}}$

f $\frac{10}{9} = 1\frac{\boxed{}}{\boxed{}}$

g $\frac{7}{6} = 1\frac{\boxed{}}{\boxed{}}$

h $\frac{11}{9} = 1\frac{\boxed{}}{\boxed{}}$

i $\frac{9}{7} = \boxed{}\frac{\boxed{}}{\boxed{}}$

j $\frac{4}{3} = \boxed{}\frac{\boxed{}}{\boxed{}}$

k $\frac{5}{4} = \boxed{}\frac{\boxed{}}{\boxed{}}$

l $\frac{13}{9} = \boxed{}\frac{\boxed{}}{\boxed{}}$

4 Convert each improper fraction to a mixed numeral:

a $\frac{8}{3} = 2\frac{\boxed{}}{\boxed{}}$

b $\frac{5}{2} = 2\frac{\boxed{}}{\boxed{}}$

c $\frac{11}{4} = 2\frac{\boxed{}}{\boxed{}}$

d $\frac{19}{8} = 2\frac{\boxed{}}{\boxed{}}$

e $\frac{13}{6} = 2\frac{\boxed{}}{\boxed{}}$

f $\frac{13}{5} = 2\frac{\boxed{}}{\boxed{}}$

g $\frac{11}{5} = 2\frac{\boxed{}}{\boxed{}}$

h $\frac{20}{9} = 2\frac{\boxed{}}{\boxed{}}$

i $\frac{16}{7} = \boxed{}\frac{\boxed{}}{\boxed{}}$

j $\frac{14}{5} = \boxed{}\frac{\boxed{}}{\boxed{}}$

k $\frac{15}{7} = \boxed{}\frac{\boxed{}}{\boxed{}}$

l $\frac{13}{7} = \boxed{}\frac{\boxed{}}{\boxed{}}$

m $\frac{12}{5} = \boxed{}\frac{\boxed{}}{\boxed{}}$

n $\frac{17}{8} = \boxed{}\frac{\boxed{}}{\boxed{}}$

o $\frac{27}{10} = \boxed{}\frac{\boxed{}}{\boxed{}}$

p $\frac{22}{9} = \boxed{}\frac{\boxed{}}{\boxed{}}$

Convert a mixed number to an improper fraction to add or subtract more easily.

1 Evaluate the following:

a $\left| \frac{1}{5} - \frac{2}{5} \right|$
 $= \frac{\square}{\square} - \frac{2}{5}$
 $= \frac{\square}{\square}$

b $\left| \frac{2}{5} - \frac{3}{5} \right|$
 $= \frac{\square}{\square} - \frac{3}{5}$
 $= \frac{\square}{\square}$

c $\left| \frac{1}{3} - \frac{2}{3} \right|$
 $= \frac{\square}{\square} - \frac{2}{3}$
 $= \frac{\square}{\square}$

d $\left| \frac{1}{4} - \frac{2}{4} \right|$
 $= \frac{\square}{\square} - \frac{2}{4}$
 $= \frac{\square}{\square}$

e $\left| \frac{2}{5} - \frac{4}{5} \right| = \underline{\hspace{2cm}}$

f $\left| \frac{3}{5} - \frac{4}{5} \right| = \underline{\hspace{2cm}}$

g $\left| \frac{1}{5} - \frac{3}{5} \right| = \underline{\hspace{2cm}}$

h $\left| \frac{1}{7} - \frac{4}{7} \right| = \underline{\hspace{2cm}}$

i $\left| \frac{3}{7} - \frac{4}{7} \right| = \underline{\hspace{2cm}}$

j $\left| \frac{5}{7} - \frac{6}{7} \right| = \underline{\hspace{2cm}}$

k $\left| \frac{2}{9} - \frac{4}{9} \right| = \underline{\hspace{2cm}}$

l $\left| \frac{4}{9} - \frac{5}{9} \right| = \underline{\hspace{2cm}}$

2 Evaluate the following, leaving your answer as a mixed numeral:

a $\left| \frac{2}{5} + \frac{4}{5} \right|$
 $= \frac{\square}{\square} + \frac{4}{5}$
 $= 2 \frac{\square}{5}$

b $\left| \frac{2}{4} + \frac{3}{4} \right|$
 $= \frac{\square}{\square} + \frac{3}{4}$
 $= 2 \frac{\square}{\square}$

c $\left| \frac{3}{5} + \frac{3}{5} \right|$
 $= \frac{\square}{\square} + \frac{2}{5}$
 $= \square \frac{\square}{\square}$

d $\left| \frac{3}{5} + \frac{4}{5} \right|$
 $= \frac{\square}{\square} + \frac{4}{5}$
 $= \square \frac{\square}{\square}$

e $\left| \frac{3}{4} + \frac{2}{4} \right| = \underline{\hspace{2cm}}$

f $\left| \frac{2}{7} + \frac{6}{7} \right| = \underline{\hspace{2cm}}$

g $\left| \frac{5}{6} + \frac{2}{6} \right| = \underline{\hspace{2cm}}$

h $\left| \frac{4}{7} + \frac{5}{7} \right| = \underline{\hspace{2cm}}$

i $\left| \frac{2}{3} + \frac{2}{3} \right| = \underline{\hspace{2cm}}$

j $\left| \frac{4}{6} + \frac{5}{6} \right| = \underline{\hspace{2cm}}$

k $\left| \frac{5}{8} + \frac{6}{8} \right| = \underline{\hspace{2cm}}$

l $\left| \frac{7}{8} + \frac{3}{8} \right| = \underline{\hspace{2cm}}$

3 Rob has one and a half kilograms of flour. He finds another three-quarters of a kilo in the cupboard. He used three-fifths of a kilo to make his cake.

How much flour is left? $\underline{\hspace{2cm}}$

Convert a mixed number to an **improper fraction**.
Make **equivalent fractions** with the same denominator. Then add or subtract.

I Evaluate the following:

a $\left| \frac{2}{3} - \frac{5}{6} \right|$

$$= \frac{\boxed{}}{\boxed{}} - \frac{5}{6}$$

$$= \frac{\boxed{}}{\boxed{}} - \frac{5}{6}$$

$$= \frac{\boxed{}}{\boxed{}}$$

b $\left| \frac{1}{4} - \frac{3}{8} \right|$

$$= \frac{\boxed{}}{\boxed{}} - \frac{3}{8}$$

$$= \frac{\boxed{}}{\boxed{}} - \frac{3}{8}$$

$$= \frac{\boxed{}}{\boxed{}}$$

c $\left| \frac{1}{5} - \frac{9}{10} \right|$

$$= \frac{\boxed{}}{\boxed{}} - \frac{9}{10}$$

$$= \frac{\boxed{}}{\boxed{}} - \frac{9}{10}$$

$$= \frac{\boxed{}}{\boxed{}}$$

d $\left| \frac{2}{5} - \frac{7}{10} \right|$

$$= \frac{\boxed{}}{\boxed{}} - \frac{7}{10}$$

$$= \frac{\boxed{}}{\boxed{}} - \frac{7}{10}$$

$$= \frac{\boxed{}}{\boxed{}}$$

e $\left| \frac{2}{5} - \frac{5}{10} \right| =$ _____

f $\left| \frac{1}{4} - \frac{5}{8} \right| =$ _____

g $\left| \frac{1}{4} - \frac{7}{8} \right| =$ _____

h $\left| \frac{1}{5} - \frac{3}{10} \right| =$ _____

i $\left| \frac{3}{5} - \frac{7}{10} \right| =$ _____

j $\left| \frac{3}{4} - \frac{7}{8} \right| =$ _____

k $\left| \frac{4}{5} - \frac{9}{10} \right| =$ _____

l $\left| \frac{3}{5} - \frac{9}{10} \right| =$ _____

m $\left| \frac{1}{2} - \frac{3}{4} \right| =$ _____

n $\left| \frac{1}{5} - \frac{3}{10} \right| =$ _____

o $\left| \frac{1}{4} - \frac{3}{8} \right| =$ _____

p $\left| \frac{2}{6} - \frac{5}{12} \right| =$ _____

1 Evaluate the following:

a $\left| \frac{1}{5} + \frac{1}{2} \right|$
 $= \frac{\square}{\square} + \frac{1}{2}$
 $= \frac{\square + \square}{\square}$
 $= \frac{\square}{\square}$

b $\left| \frac{2}{6} + \frac{1}{4} \right|$
 $= \frac{\square}{\square} + \frac{1}{4}$
 $= \frac{\square + \square}{\square}$
 $= \frac{\square}{\square}$

c $\left| \frac{1}{3} + \frac{2}{5} \right|$
 $= \frac{\square}{\square} + \frac{2}{5}$
 $= \frac{\square + \square}{\square}$
 $= \frac{\square}{\square}$

d $\left| \frac{1}{2} + \frac{1}{6} \right|$
 $= \frac{\square}{\square} + \frac{1}{6}$
 $= \frac{\square + \square}{\square}$
 $= \frac{\square}{\square}$

e $\left| \frac{1}{4} + \frac{2}{3} \right|$
 $= \frac{\square}{\square} + \frac{2}{3}$
 $= \frac{\square + \square}{\square}$
 $= \frac{\square}{\square}$

2 Evaluate the following and leave your answer as a mixed numeral:

a $\left| \frac{7}{10} + \frac{2}{3} \right|$

b $\left| \frac{5}{8} + \frac{3}{5} \right|$

c $\left| \frac{7}{12} + \frac{2}{5} \right|$

d $\left| \frac{5}{9} + \frac{3}{4} \right|$

3 Evaluate the following:

a $\left| \frac{1}{4} - \frac{1}{3} \right|$
 $= \frac{\square}{\square} - \frac{1}{3}$
 $= \frac{\square - \square}{\square}$
 $= \frac{\square}{\square}$

b $\left| \frac{1}{5} - \frac{1}{2} \right|$
 $= \frac{\square}{\square} - \frac{1}{2}$
 $= \frac{\square - \square}{\square}$
 $= \frac{\square}{\square}$

c $\left| \frac{1}{4} - \frac{2}{3} \right|$
 $= \frac{\square}{\square} - \frac{2}{3}$
 $= \frac{\square - \square}{\square}$
 $= \frac{\square}{\square}$

d $\left| \frac{1}{2} - \frac{2}{3} \right|$
 $= \frac{\square}{\square} - \frac{2}{3}$
 $= \frac{\square - \square}{\square}$
 $= \frac{\square}{\square}$

e $\left| \frac{1}{4} - \frac{3}{5} \right|$
 $= \frac{\square}{\square} - \frac{3}{5}$
 $= \frac{\square - \square}{\square}$
 $= \frac{\square}{\square}$

2 Evaluate the following and leave your answer as a mixed numeral:

a $\left| \frac{2}{5} - \frac{1}{3} \right|$

b $\left| \frac{3}{4} - \frac{1}{3} \right|$

c $\left| \frac{3}{4} - \frac{2}{3} \right|$

d $\left| \frac{4}{5} - \frac{2}{3} \right|$

To find a fraction of a quantity, multiply the fraction by the number:

Multiply numerator by number, then divide by denominator.

$$\frac{2}{3} \times 9 = \frac{2 \times 9}{3} = (2 \times 9) \div 3 = 6$$

1 Find each amount without using a calculator:

a $\frac{1}{4}$ of 12

$$= 12 \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

b $\frac{1}{5}$ of 10

$$= 10 \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

c $\frac{1}{4}$ of 24

$$= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

d $\frac{1}{8}$ of 16

$$= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

e $\frac{1}{3}$ of 15

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

f $\frac{1}{4}$ of 20

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

g $\frac{1}{6}$ of 36

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

h $\frac{1}{8}$ of 48

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

i $\frac{1}{10}$ of 30

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

j $\frac{1}{2}$ of 20

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

k $\frac{1}{5}$ of 45

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

l $\frac{1}{9}$ of 27

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

2 Find each amount without using a calculator:

a $\frac{3}{4}$ of 12

$$= (3 \times \underline{\hspace{2cm}}) \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

b $\frac{3}{5}$ of 10

$$= (3 \times \underline{\hspace{2cm}}) \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

c $\frac{3}{4}$ of 20

$$= (3 \times \underline{\hspace{2cm}}) \div \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

d $\frac{2}{5}$ of 15

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

e $\frac{4}{5}$ of 30

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

f $\frac{3}{4}$ of 24

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

g $\frac{2}{3}$ of 18

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

h $\frac{5}{6}$ of 12

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

i $\frac{3}{8}$ of 40

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

3 Wally has 20 marbles and gave $\frac{2}{5}$ of them to his brother. How many marbles did his brother receive?

4 Lisa has 16 coins and gave $\frac{1}{2}$ to her brother. How many coins did her brother receive?

- 1 A classroom has 30 chairs. If $\frac{1}{2}$ of the chairs are taken, how many chairs are taken?

- 2 If $\frac{1}{3}$ of 24 slices of pizza were eaten, how many slices were eaten?

- 3 There were 36 posters at a shop and $\frac{3}{4}$ of them were sold. How many posters were sold?

- 4 Robert has \$40 and decides to save $\frac{3}{5}$ of it. How much will Robert save?

- 5 Out of 30 students, $\frac{4}{5}$ passed the exam. How many students passed the exam?

- 6 Maggie has 32 loyalty points and redeems $\frac{3}{4}$ of them for a gift. How many points is that?

- 7 Two-thirds of the balloons at a party are white. There are 18 balloons at the party.

a How many balloons are white?

b How many balloons are not white?

- 8 Three-quarters of the stickers on a teacher's desk are blue. There are 20 stickers altogether.

a How many stickers are blue?

b How many stickers are not blue?

- 9 Three-fifths of the students brought their calculators to class. There are 30 students in this class.

a How many students brought their calculators?

b How many students did not bring their calculators?

- 10 There are 20 coins. Two-fifths are gold.

a How many coins are gold?

b How many coins are not gold?



1 Make the Crunchy drops recipe 3 times bigger.

a $\frac{1}{4}$ cup raisins $\times 3$ = _____

= _____

b $\frac{1}{2}$ cup coconut $\times 3$ = _____

= _____

c $\frac{3}{4}$ cup butter $\times 3$ = _____

= _____

d $\frac{1}{3}$ cup peanuts $\times 3$ = _____

= _____

Multiply fractions and whole numbers:

Multiply numerator by number,
divide by denominator, simplify.

$$\frac{1}{2} \times 5 = \frac{1 \times 5}{2} = \frac{5}{2} = 2\frac{1}{2}$$

$$\frac{3}{4} \times 2 = \frac{3 \times 2}{4} = \frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2}$$



2 a $\frac{2}{3} \times 4$ = _____

= _____

b $\frac{2}{5} \times 4$ = _____

= _____

c $\frac{3}{8} \times 3$ = _____

= _____

d $\frac{5}{12} \times 3$ = _____

= _____

3 a $5 \times \frac{1}{4}$ hour = _____

= _____

b $4 \times \frac{1}{3}$ hour = _____

= _____

c $3 \times \frac{1}{5}$ hour = _____

= _____

d $10 \times \frac{1}{2}$ day = _____

= _____

4 Simplify the following:

a $\frac{5}{8} \times 8$ = _____

b $\frac{3}{4} \times 4$ = _____

c $\frac{5}{6} \times 6$ = _____

d $\frac{2}{3} \times \frac{1}{2}$ = _____

e $\frac{12}{13} \times 13$ = _____

f $\frac{5}{7} \times 7$ = _____

g $\frac{7}{10} \times 10$ = _____

h $\frac{5}{4} \times 24$ = _____

i $\frac{8}{9} \times 63$ = _____

j $\frac{12}{20} \times 40$ = _____

k $\frac{6}{15} \times 90$ = _____

l $\frac{24}{36} \times 12$ = _____

5 Write a number sentence to solve each problem.

a Twelve children were each offered a quarter of an apple.

How many apples were used? _____

b Each day, $\frac{1}{6}$ of the class gave speeches. After three days,

what fraction of the class had given speeches? _____

c On a trip across the Nullabor Plain, the Clarke sisters plan to cover $\frac{3}{20}$ of

the distance each day. How much of the trip will they cover after 5 days? _____



To divide a whole number by a unit fraction:

Multiply the **whole number** by the **denominator** to find the new **numerator**.

$$3 \div \frac{1}{4} = \frac{3 \times 4}{4} = \frac{12}{4}$$

1 Evaluate:

a $7 \div \frac{1}{4} =$ _____

b $8 \div \frac{1}{6} =$ _____

c $15 \div \frac{1}{8} =$ _____

d $24 \div \frac{1}{9} =$ _____

e $30 \div \frac{1}{11} =$ _____

f $100 \div \frac{1}{13} =$ _____

To divide a fraction by a whole number:

Multiply the **denominator** by the **whole number**.

$$\frac{4}{5} \div 3 = \frac{4}{5 \times 3} = \frac{4}{15}$$

2 Divide these fractions.

a $\frac{2}{3} \div 7 =$ _____

b $\frac{3}{4} \div 5 =$ _____

c $\frac{4}{9} \div 3 =$ _____

d $\frac{5}{8} \div 6 =$ _____

e $\frac{5}{6} \div 4 =$ _____

f $\frac{7}{10} \div 8 =$ _____

3 Divide these improper fractions and simplify the answers.

a $\frac{3}{2} \div 9 =$ _____

b $\frac{10}{5} \div 6 =$ _____

c $\frac{12}{6} \div 8 =$ _____

d $\frac{5}{3} \div 10 =$ _____

e $\frac{8}{4} \div 4 =$ _____

f $\frac{10}{8} \div 5 =$ _____

4 Convert these mixed numbers to improper fractions, then divide and simplify.

a $1\frac{1}{2} \div 6 =$ _____

b $1\frac{2}{4} \div 6 =$ _____

c $1\frac{5}{10} \div 6 =$ _____

5 Halve the scone recipe.

a $\frac{1}{3}$ cup butter $\div 2 =$ _____

b $\frac{5}{4}$ cups milk $\div 2 =$ _____

c $3\frac{1}{2}$ cups flour $\div 2 =$ _____

6 A length of ribbon is 5 metres long. If you cut the ribbon into $\frac{1}{6}$ m pieces, how many pieces of ribbon do you have?

To find the whole amount from a fraction amount:

Divide the number by the numerator, then multiply by the denominator.

$$\frac{1}{2} \text{ is } 5 \quad 5 \times 2 = 10$$

$$\frac{2}{3} \text{ is } 6 \quad (6 \div 2) \times 3 = 9$$

1 Simplify the following.

- a If 7 is $\frac{1}{2}$ of an amount, what is the whole? _____ $\times$ _____ = _____
- b If 5 is $\frac{1}{3}$ of an amount, what is the whole? _____
- c $\frac{1}{4}$ of an amount is 6. What is the whole? _____
- d $\frac{1}{6}$ of an amount is 10. What is the whole? _____
- e $\frac{1}{5}$ is 3. The whole is: _____
- f $\frac{1}{10}$ is 5. The whole is: _____
- g $\frac{1}{6}$ is 8. The whole is: _____

2 Calculate the following.

- a $\frac{2}{4}$ is 14. The whole is: (_____ $\div$ _____) $\times$ _____ = _____
- b $\frac{3}{5}$ is 18. The whole is: _____
- c $\frac{4}{6}$ is 16. The whole is: _____
- d $\frac{5}{8}$ is 20. The whole is: _____
- e $\frac{7}{9}$ is 21. The whole is: _____
- f $\frac{8}{10}$ is 24. The whole is: _____
- g $\frac{10}{12}$ is 30. The whole is: _____



3 Find the whole from the fraction.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------|
| a $\frac{1}{4} = 3$, whole = _____ | b $\frac{1}{5} = 9$, whole = _____ | c $\frac{1}{3} = 13$, whole = _____ |
| d $\frac{2}{3} = 14$, whole = _____ | e $\frac{3}{4} = 30$, whole = _____ | f $\frac{4}{5} = 32$, whole = _____ |
| g $\frac{7}{10} = 35$, whole = _____ | h $\frac{5}{8} = 45$, whole = _____ | i $\frac{4}{6} = 28$, whole = _____ |
| j $\frac{9}{12} = 45$, whole = _____ | k $\frac{9}{10} = 81$, whole = _____ | l $\frac{4}{9} = 44$, whole = _____ |

- 1 Leo is mixing paint colours. He starts with $4\frac{1}{2}$ litres of white paint and pours in $1\frac{3}{4}$ litres of black paint, then mixes. The paint is too dark, so he scoops out $1\frac{1}{3}$ litres and adds another $\frac{5}{6}$ of a litre of white paint, then mixes. Now it is just right! How many litres of the perfect grey paint are in Leo's bucket?



- 2 Work out the answers to the following.

- a $\frac{1}{3}$ of \$27 = _____
- b $\frac{3}{4}$ of \$400 = _____
- c $\frac{1}{5}$ of 10 hours = _____
- d $\frac{2}{3}$ of 1 hour = _____
- e $\frac{3}{5}$ of 1 tonne = _____
- f $\frac{3}{5}$ of 200 g = _____
- g $\frac{7}{10}$ of 2 hours = _____
- h $\frac{2}{5}$ of 1 year = _____
- i $\frac{2}{5}$ of 1 metre = _____
- j $\frac{3}{5}$ of \$75 = _____
- k $\frac{3}{8}$ of \$64 = _____
- l $\frac{1}{5}$ of 1 kg = _____

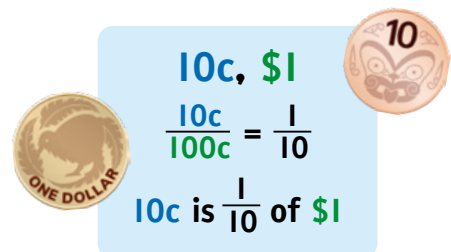
- 3 Divide the cake recipe by 5.

- a $1\frac{1}{4}$ kg butter $\div 5 =$ _____
- b $2\frac{1}{7}$ kg sugar $\div 5 =$ _____
- c 20 eggs $\div 5 =$ _____
- d $1\frac{7}{8}$ kg flour $\div 5 =$ _____
- e $1\frac{2}{3}$ cup milk $\div 5 =$ _____
- f 15 tsp vanilla $\div 5 =$ _____



- 4 Express the first quantity as a fraction of the second.

- a 10 s, 30 s _____
- b 3 cm, 11 cm _____
- c 4c, 20c _____
- d \$6, \$24 _____
- e 30 min, 1 h _____
- f 90°, 360° _____
- g 20 cm, 2 m _____
- h 40c, \$2 _____
- i 20 g, 200 g _____
- j \$3.30, \$9.90 _____
- k \$8, \$72 _____
- l 3 m, 36 m _____



Fractions

- Instructions**
- This part consists of 12 multiple-choice questions.
 - Fill in only ONE CIRCLE for each question.
 - Each question is worth 1 mark.
 - Calculators are NOT allowed.

Time allowed: 15 minutes

Total marks: 12

					Marks	
1	$7 + \frac{7}{10}$ equals	(A) $7\frac{3}{10}$	(B) $7\frac{7}{10}$	(C) $7\frac{1}{10}$	(D) $\frac{107}{10}$	☐
2	$1 - \frac{80}{1000}$ equals	(A) $\frac{1080}{1000}$	(B) $\frac{900}{1000}$	(C) $\frac{23}{25}$	(D) $\frac{24}{25}$	☐
3	$\frac{1}{5}$ of 35 + 16 equals	(A) 11	(B) $10\frac{1}{5}$	(C) $11\frac{1}{5}$	(D) 10	☐
4	$\frac{1}{2} + \frac{1}{3}$ equals	(A) $\frac{1}{5}$	(B) $\frac{5}{6}$	(C) $\frac{1}{6}$	(D) $\frac{2}{3}$	☐
5	The value of $\frac{1}{2} + \frac{3}{4} + \frac{5}{6}$ is	(A) $2\frac{1}{12}$	(B) $3\frac{5}{12}$	(C) $2\frac{7}{12}$	(D) $\frac{15}{24}$	☐
6	$\frac{3}{4} + \frac{4}{3}$ equals	(A) $\frac{25}{12}$	(B) 1	(C) $\frac{12}{7}$	(D) $\frac{7}{12}$	☐
7	Two-thirds of a number is equal to 8; the number is	(A) 16	(B) 24	(C) 12	(D) 40	☐
8	$\frac{15}{28} \div 5$ equals	(A) $\frac{5}{9}$	(B) $\frac{3}{2}$	(C) $\frac{5}{18}$	(D) $\frac{1}{6}$	☐
9	$8 \times \frac{4}{5} =$	(A) $8\frac{1}{5}$	(B) $8\frac{2}{5}$	(C) $6\frac{2}{5}$	(D) $6\frac{1}{5}$	☐
10	Which of the following numbers is the largest?	(A) $\frac{2}{3}$	(B) $\frac{3}{5}$	(C) $\frac{2}{7}$	(D) $\frac{7}{10}$	☐
11	Find $\frac{1}{7}$ of 98.	(A) 14	(B) 15	(C) 12	(D) 13	☐
12	$4\frac{2}{5} + 1\frac{1}{4}$ equals	(A) $3\frac{7}{20}$	(B) $5\frac{13}{20}$	(C) $6\frac{9}{20}$	(D) $7\frac{11}{20}$	☐

Total marks achieved for PART A

12

Fractions

- Instructions**
- This part consists of 15 questions.
 - Each question is worth 1 mark.
 - Write only the answer in the answer column.
 - For any working use the question column. Calculators are NOT allowed.

Time allowed: 20 minutes

Total marks: 15

Questions

1 $\frac{7}{8} = \frac{\quad}{56}$

2 Simplify $\frac{9}{12}$.

3 Write $4\frac{7}{9}$ as an improper fraction.

4 Write $\frac{37}{4}$ as a mixed number.

5 What fraction is 14 m of 20 m?

6 Subtract $\frac{39}{70} - \frac{9}{70}$.

7 Work out $\frac{2}{3} + \frac{5}{7}$.

8 Find $\frac{8}{8} - \frac{1}{2}$.

Evaluate the following.

9 $\frac{3}{7} \times 5 =$

10 $8 \times \frac{7}{16} =$

11 $\frac{15}{27} \div 3 =$

12 $15 \div \frac{2}{5} =$

13 $2\frac{3}{5} - 1\frac{1}{6}$

14 $5\frac{5}{7} + \frac{3}{20} =$

15 There were 24 balloons in a packet. $\frac{2}{3}$ of the balloons were red. How many red balloons were in the packet?

Answers

Marks

Total marks achieved for PART B