Integers

Mana Maths

Te reo Māori terms

tau tōpū
integer
Open in Te Aka

tau tōrunga
positive number
Open in Te Aka

tau tōraro
negative number
Open in Te Aka

uara
number value
Open in Te Aka

Notes & Steps

Key idea

Integers are whole numbers that can be positive, negative, or zero. They have no fractions or decimals. Use a number line to visualise addition and subtraction.

Steps — adding integers

1. Start at the first number on the number line.
2. If adding a positive, move right. If adding a negative, move left.

Steps — subtracting integers

1. Change subtraction to adding the opposite.
2. Then follow the addition rules.
3. Example: $7 - (-2) = 7 + 2 = 9$.

Key facts

- Opposite of -7 is 7.
- $3, -5, 0$ are integers; $1/2$ and -5.5 are not.
- $-3 + 5 = 2$ (start at -3, move 5 right)
- $7 - (-2) = 7 + 2 = 9$
- $(-3) + (-4) = -7$
- On a number line, $-1 > -5$ because -1 is further right.

Common mistake

Thinking -5 is greater than -1. On the number line, -1 is to the right of -5, so $-1 > -5$.

Try these

1. What is the opposite of -7?
2. Calculate: $-3 + 5$.
3. Order from smallest: $-2, 0, 3$.

Notes & Steps

Example 1: temperature rise

A temperature is $-4°$C. It rises by $10°$C. What is the new temperature?

$$-4 + 10 = 6$$

Answer: $6°$C.

Example 2: adding negatives

Calculate $(-3) + (-4)$.

$$(-3) + (-4)$$

Start at -3, move 4 left: -7. Answer: -7.

Try these

1. Calculate: $5 + (-2)$.
2. Calculate: $-1 - 3$.
3. Calculate: $7 - (-2)$.

Notes & Steps

Example 3: multiply negatives

Calculate $(-3) \times 4$.

$$(-3) \times 4$$

Positive $\times$ negative = negative. Answer: -12.

Example 4: diving scenario

A diver at -12 m ascends 3 m then descends 5 m.

$$-12 + 3 - 5 = -14$$

Answer: final depth is -14 m.

Common mistake

Forgetting that two negatives make a positive. $(-3) \times (-4) = 12$, not -12. Think: subtracting a debt means gaining money.

Start Tasks

1. What is the opposite of -7?

2. Which of these are integers: $3, -5.5, 0, 1/2$?

3. Calculate: $-3 + 5$.

4. Calculate: $7 - (-2)$.

5. Fill in: $-4 + \_\_\_\_\_ = 0$.

6. Order these from smallest to largest: $-2, 0, 3$.

7. A temperature is $-4°$C. It rises by $10°$C. What is the new temperature?

8. Which is greater: -1 or -5?

9. Complete: $(-3) + (-4) = \_\_\_\_\_$

Start Tasks

1. Add: $5 + (-2)$.

2. Subtract: $-1 - 3$.

3. Explain in one short sentence what an integer is.

4.

5.

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7.

8.

9.

Build Tasks

1. Calculate: $-8 + 12$.

2. Calculate: $7 - (-9)$.

3. Evaluate: -3×4.

4. Evaluate: $-12 \div 3$.

5. Put in order: $-10, -2, 0, 5, -7$.

6. A diver starts at -12 m, ascends 3 m, then descends 5 m. What is the final depth?

7. True or False: a negative number plus a negative number is always negative.

8. Fill in the blank: $-15 + \_\_\_\_\_ = -5$.

9. Which is closer to 3: 2.9 or 3.1? (interpretation question)

Build Tasks

1. Explain a short rule for adding a negative number.

2. Calculate: $-4 - (-6)$.

3. Round: (conceptual) is rounding negative integers done same as positives? Short answer.

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Push Tasks

1. Explain why $-3 \times -4 = 12$.

2. A calculation: $-15 + 28 - (-3)$. Show working.

3. If the temperature drops by 8 then rises by 5, express net change and final value from $2°$C.

4. A number line problem: plot and justify the position of -2 and 3 and show distance between

5. A student claims $-2 > -10$ is false. Are they correct? Explain.

6. Calculate: $(-2)^3$ and -2^3 and explain difference.

7. A sequence: $-1, -4, -9, -16$. Describe the rule and give next term.

8. Solve: $x + (-7) = 3$.

9. Write a short explanation: how to subtract a larger negative from a

Push Tasks

1. Create one contextual problem involving integers and provide a solution.

2. Evaluate: $(-3) \times (-2) - 4 \times (-1)$.

3. Prove in one short sentence: adding zero to any integer leaves it unchanged.

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