Understanding Number — Practice Worksheet

Part A — Integers on a number line

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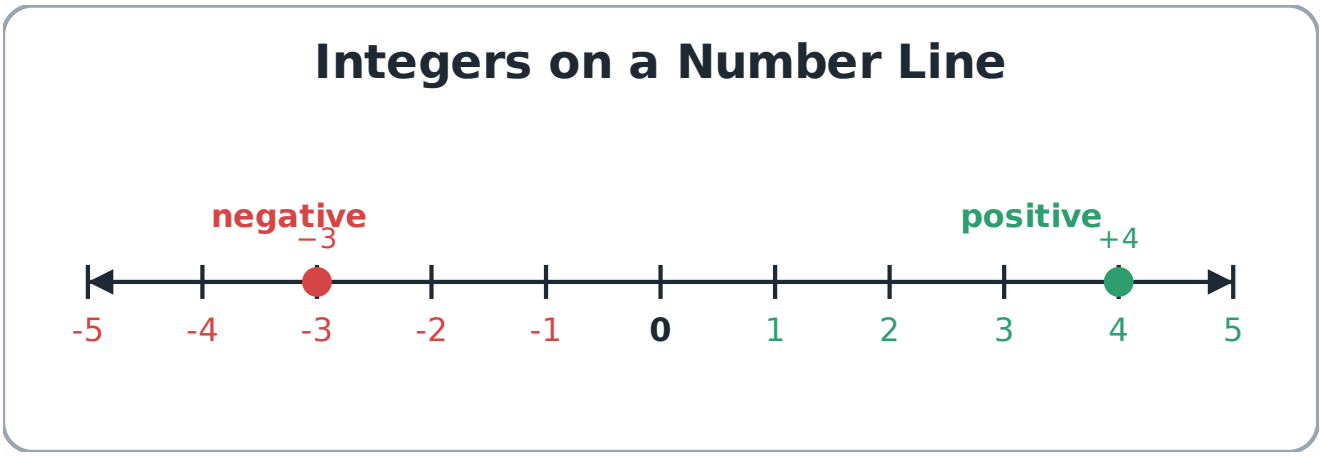
Positive and negative integers describe everyday situations such as temperature, money owed, or floors below ground. On a number line, numbers get **smaller** as you move left and **larger** as you move right. Zero sits in the middle and separates the negatives from the positives.



Use a number line to compare and order integers.

Worked example 1 — ordering. Order $3, -2, 0, -5, 1$ from lowest to highest.

Reading left to right along the line: $-5, -2, 0, 1, 3$. The number furthest left is the smallest.

Worked example 2 — comparing. Which is smaller, -6 or -2?

-6 sits further to the left, so $-6 < -2$.

Watch out. With negatives, "bigger digits" does not mean a bigger number. -8 is *smaller* than -3, even though 8 is bigger than 3.

Q1. Write the integer shown by each described point:

(a) 4 to the left of 0: _____ (b) 2 to the right of 0: _____ (c) 1 to the left of -2: _____

Q2. Order each set from **lowest to highest**:

(a) $6, -3, 0, -7, 2$

(b) $-1, -9, 4, -4, 8$

(c) $-10, 10, -5, 5, 0$

Q3. A diver is at $-8\ m$ and a bird is at $+5\ m$. Which is **further from sea level (0)**? Explain how the number line helps you decide.

Q4. Fill in $<$, $>$ or $=$:

(a) -3 _____ 2 (b) -7 _____ -4 (c) 0 _____ -1 (d) -6 _____ -6

Q5. **Real-world integers.** Write an integer for each situation:

(a) 5°C below zero: _____ (b) a lift going to floor 3 below ground:

(c) a $20 debt: _____ (d) 12 m above sea level: _____

Part B — Place value, primes, fractions & percentages

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This part connects four ideas from the lesson: **multiplicative place value** (each place is 10 times the place to its right), **square, prime and composite** numbers shown as arrays, **ordering fractions**, and linking common **percentages** to fractions and decimals.

> **Worked example — percentage of a quantity.**
>
> 50% means 50 out of 100 $= 50/100 = 1/2 = 0.5$. So 50% of 60 $= 1/2 \times 60 = 30$.

> **Worked example — primes vs composites.** 7 can only be built as 1×7 (one row) → prime. 12 can be $1{\times}12$, $2{\times}6$ or $3{\times}4$ → composite.

> To find 10% of a number, divide by 10. To find 25%, find a quarter (halve, then halve again).

Place value

Q1. In 4.62, the 6 is in the _____ place and is worth _____. The 2 is worth _____.

Q2. What happens to the digit 5 when 5.0 becomes 50 (how many times larger)? What about $5.0 \rightarrow 0.5$?

Square, prime & composite

Q3. Draw the array for 9 as a square number. Why is 9 square?

Q4. Sort into prime or composite: *7, 12, 13, 15, 21, 23*.

Q5. Explain why 1 is neither prime nor composite.

Ordering fractions

Q6. Order from smallest to largest: *1/2, 1/4, 3/4, 1/8*.

Answer: _____

Q7. True or false: *2/4 = 1/2*. Explain.

Percentages, fractions & decimals

Q8. Complete the table.

Percentage	Fraction	Decimal
50%	*1/2*	0.5
25%	*1/4*	_____
10%	_____	0.1

Q9. Find 25% of 80 and 10% of 60.

Part C — Square, prime & composite numbers

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Build each number as a rectangle of counters to reveal its type. A **prime** makes only one row; a **square** number makes a perfect square; a **composite** makes more than one rectangle.

Worked example. 12 can be built as 1×12, 2×6 or 3×4 — more than one rectangle, so it is composite. $16 = 4\times4$ forms a perfect square, so it is a square number.

A number can be more than one type at once: 16 is both square *and* composite. Only 1 is neither prime nor composite.

Q1. Classify each number as **square**, **prime** or **composite**. Sketch an array to justify each: $4, 11, 15, 16, 23, 25, 36$.

Q2. List all the prime numbers between 1 and 20.

Answer: _____

Q3. Find a number under 30 that is **both** square and even. _____

Q4. Explain why 1 is not a prime number.

Q5. **Challenge.** 49 is a square number. What is $\sqrt{49}$? Draw its array.

Part D — Fractions & percentages

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Common conversions to know by heart: $1/4 = 0.25 = 25\%$; $1/2 = 0.5 = 50\%$; $3/4 = 0.75 = 75\%$; $1/10 = 0.1 = 10\%$. Rename fractions to a common denominator before ordering them.

> **Worked example.** To compare $1/2$ and $3/8$, rename $1/2$ as $4/8$. Since $4/8 > 3/8$, a half is larger.

Q1. Order from smallest to largest: $1/2, 1/4, 3/4, 1/8$. _____

Q2. Order these mixed numerals: $1\ 1/2, 1\ 1/4, 2, 3/4$. _____

Q3. Complete the table.

Fraction	Decimal	Percentage
$1/2$		
	0.25	
		10%
$3/4$		

Q4. Which is larger: 50% of a pizza or $3/8$ of the same pizza? Explain.

Q5. **Exit ticket.** Write one integer, one prime number, and one fraction equal to 50%.