

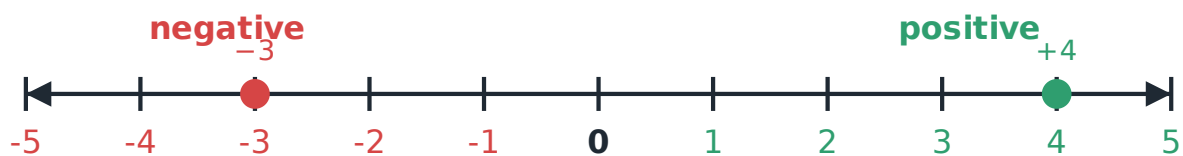
# Understanding Number — Practice Worksheet

## 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.

### Integers on a Number Line



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  $-8\text{ m}$  and a bird is at  $+5\text{ m}$ . 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)  $5^{\circ}\text{C}$  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  $1 \times 7$  (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:  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{3}{4}$ ,  $\frac{1}{8}$ .

Answer: \_\_\_\_\_

**Q7.** True or false:  $\frac{2}{4} = \frac{1}{2}$ . Explain.

### Percentages, fractions & decimals

**Q8.** Complete the table.

Percentage	Fraction	Decimal
50%	$\frac{1}{2}$	0.5
25%	$\frac{1}{4}$	_____
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  $1 \times 12$ ,  $2 \times 6$  or  $3 \times 4$  — more than one rectangle, so it is composite.  $16 = 4 \times 4$  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%.