

Name _____

Date _____

2.1 Constructing expressions — worksheet

Use letters to represent numbers, use the correct order of operations in algebraic expressions, and write and understand expressions. · 56 questions · Show your working.

Remember

- In algebra a letter stands for an **unknown** number.
- An **expression** has no equals sign; an **equation** does.
- Write the number before the letter: $x \times 3$ is written **$3x$** , never $x3$.
- Never write the 1: $1 \times a$ is written **a** .
- Write division as a fraction: $n \div 4$ is written **$n/4$** .
- $a \times a$ is written **a^2** and $a \times a \times a$ is written **a^3** .
- “More than” means add; “less than” means subtract, but watch the order — “ x less than y ” is $y - x$, not $x - y$.
- “Doubled” means $\times 2$, “tripled” means $\times 3$, “half of” means $\div 2$.

A · Fluency — Turn words and situations into expressions.

1 Write an expression for: **x more than y** .

2 Write an expression for: **x less than y** .

3 Write an expression for: **m more than two times n** .

4 Write an expression for: **a less than three times b** .

5 Write an expression for: **p multiplied by q** .

6 Write an expression for: **n divided by 4**.

7 Write an expression for: **5 more than n** .

8 Write an expression for: **6 less than n** .

9 Write an expression for: **n doubled**.

10 Write an expression for: **k tripled**.

11 Write an expression for: **half of x** .

12 Write an expression for: **a quarter of y** .

- 13 Write an expression for: **n squared**.

- 14 Write an expression for: **3 more than twice x** .

- 15 Write an expression for: **4 less than half of w** .

- 16 Write an expression for: **the sum of c and d , all multiplied by 5**.

- 17 Sofia has a bag containing n counters. She puts in two more counters. Write an expression for the number of counters in the bag.

- 18 Sofia has a bag containing n counters. She takes out three counters. Write an expression for the number of counters in the bag.

- 19 The temperature on Tuesday was t °C. Write an expression for a temperature 2 °C higher than Tuesday's.

- 20 The temperature on Tuesday was t °C. Write an expression for a temperature 3 °C lower than Tuesday's.

- 21 The temperature on Tuesday was t °C. Write an expression for twice Tuesday's temperature.

- 22 In a clothes shop T-shirts cost $\$t$ and shirts cost $\$s$. Write an expression for the cost of one T-shirt and one shirt.

- 23 In a clothes shop T-shirts cost $\$t$ and shirts cost $\$s$. Write an expression for the cost of four T-shirts and two shirts.

- 24 Tacos cost $\$t$ each and burritos cost $\$b$ each. Write an expression for the total cost of two tacos and four burritos.

B · Reasoning — Correct notation, terms and equivalence.

- 25 Write $x \times 3$ in the correct algebraic form.

- 26 Write $y \div 5$ in the correct algebraic form.

- 27 Write $1 \times a$ in its simplest form.

- 28 Write $a \times a$ in index form.

- 29 How many terms are there in the expression $5n + 4$?

- 30 What is the coefficient of n in the expression $7n - 2$?

- 31 In the equation $5n + 4 = 19$, what is the value of the constant on the left-hand side?

- 32 Which of these is an **equation** rather than an expression?
☐ $5n + 4$
☐ $3x - 7$
☐ $2y + 1 = 9$
☐ $p \times q$
- 33 Which expression is **equivalent** to $5n + 4$?
☐ $5 \times n + 4$
☐ $5 + 4n$
☐ $4 \times n + 5$
☐ $9n$
- 34 Zara says $2n + 3$ and $3 + 2n$ are equivalent. Is she right?
☐ Yes
☐ No
- 35 Zara says $2n - 3$ and $3 - 2n$ are equivalent. Is she right?
☐ Yes
☐ No
- 36 Pedro was asked for the total cost of one T-shirt at \$ t and one shirt at \$ s . He wrote $t \times s$. Write the correct expression.

C · Challenge — Perimeters, ages and two-step wording.

- 37 A rectangle has width x cm. Its length is six times its width. Write an expression for its perimeter, in cm.

- 38 A rectangle has width x cm and length six times its width. Write an expression for its area, in cm^2 .

- 39 A green rectangle has width x cm and a length six times its width. A blue rectangle has width y cm and a length 3 cm more than twice its width. Write an expression for the difference in the lengths (green – blue).

- 40 Three consecutive integers start at n . Write a simplified expression for their total.

- 41 A number is n . Write an expression for the number that is 4 more than double it.

- 42 A number is n . Write an expression for double the number that is 4 more than n .

- 43** Ella is half of Mathew's age. Mathew is x years old. Kathryn is three times Mathew's age. Write an expression for the total of Ella's and Kathryn's ages.

- 44** A taxi charges \$3 plus \$2 for every kilometre travelled. Write an expression for the cost of a journey of k kilometres.

D · Word problems — Expressions from real situations.

- 45** A bag of rice has mass m kg. Write an expression for the mass of 7 identical bags, in kg.

- 46** A pack of pens costs \$ p . Ravi pays with a \$20 note. Write an expression for his change, in dollars.

- 47** A school has s students. 40 more students join. Write an expression for the new number of students.

- 48** A cinema has r rows with 12 seats in each row. Write an expression for the total number of seats.

- 49** A rope of length r metres is cut into 5 equal pieces. Write an expression for the length of one piece, in metres.

- 50** Water costs \$ w per litre. Write an expression for the cost of 3 litres of water and a \$2 delivery charge.

- 51** A phone plan costs \$12 a month plus \$0.50 for each extra minute. Write an expression for the cost of a month with e extra minutes.

- 52** Ahmed is a years old. His sister is 3 years younger. Write an expression for the sum of their two ages.

- 53** A square has side length s cm. Write an expression for its perimeter, in cm.

- 54** A square has side length s cm. Write an expression for its area, in cm^2 .

- 55** A class has b boys and g girls. Each student needs 3 pencils. Write an expression for the total number of pencils needed.

- 56** A train ticket costs \$ t . A group buys 4 adult tickets and 2 child tickets. A child ticket costs half an adult ticket. Write an expression for the total cost, in dollars.
