

Expressions and Patterns: math practice, Grade 5 – download the PDF

21 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Operations in the right order



Evaluate each expression.

- a. $14 + 6 \times 2$
- b. $30 - 12 \div 4$
- c. $5 \times 4 - 3$
- d. $48 \div 6 + 9$

2 Parentheses first



Evaluate each expression.

- a. $(14 + 6) \times 2$
- b. $(30 - 12) \div 3$
- c. $5 \times (9 - 4)$
- d. $60 \div (4 + 6)$

3 Left to right



Evaluate, working from left to right when operations have the same rank.

a. $40 - 15 + 5$

b. $24 \div 4 \times 3$

c. $9 \times 2 \div 6$

d. $50 - 20 - 10$

4 From words to symbols



Write an expression for each sentence, then evaluate it.

a. Add 6 and 9, then multiply by 4.

b. Multiply 6 by 4, then add 9.

c. Subtract 7 from 25, then divide by 3.

d. Divide 36 by 4, then subtract 2.

5 Continue the pattern



A pattern starts at 5 and the rule is “add 4”. The first three terms are **5, 9, 13**. Write the next four terms.

6 Ordered pairs from two patterns

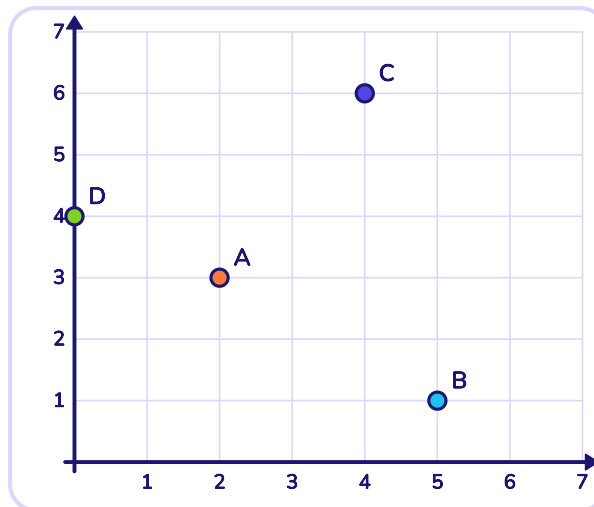


Pattern A starts at 0 and adds 2. Pattern B starts at 0 and adds 10. Write the first five terms of each pattern, then the five ordered pairs (term of A, term of B).

7 Reading points



Write the ordered pair for each of the points A, B, C and D.



8 Two kinds of operations



Evaluate $3 \times (8 + 5) - 12 \div 4$. Show each step.

9 Nested groups



Evaluate.

a. $[20 - (3 + 5)] \times 4$

b. $2 \times [36 \div (2 + 4)] + 1$

c. $\{5 \times [2 + (9 - 3)]\} \div 4$

10 Find the mistake



Leo wrote $8 + 2 \times 5 = 50$. What did he do wrong? What is the correct value? Where could you add parentheses so that the value is 50?

11 Expressions for stories



Write one expression for each story and evaluate it.

- a. Ana has 3 packs of 8 stickers and gives away 5 stickers. How many are left?
- b. A team buys 5 jerseys at 12 dollars each and receives an 8-dollar discount. What does the team pay?
- c. Each of 4 friends pays for a 7-dollar ticket and a 3-dollar snack. What is the total?

12 Which is larger?



Without calculating, decide which is larger. Explain.

- a. $6 \times (23 + 19)$ or $23 + 19$
- b. $0.5 \times (62 - 18)$ or $62 - 18$
- c. $(45 + 30) \div 5$ or $45 + 30$

13 Say it in words



Describe each expression in words, without evaluating it.

- a. $2 \times (15 + 4)$
- b. $(15 + 4) \div 2$
- c. $3 \times 10 + 4$

14 Comparing two patterns



Pattern A starts at 0 and adds 4. Pattern B starts at 0 and adds 8. List the first six terms of each, write the ordered pairs, and describe how B compares with A. Why does this happen?

15 Graph two patterns



Pattern A starts at 0 and adds 5. Pattern B starts at 0 and adds 10. Write the first five terms of each, list the ordered pairs (A, B), plot them on a coordinate plane and describe what you notice.

16 Different starting numbers



Pattern A starts at 1 and adds 3. Pattern B starts at 2 and adds 6.

- Write the first five terms of each and the ordered pairs (A, B).
- If the next term of A is 16, what is the next term of B?
- What are the 10th terms of A and B?

17 Four times as large



Pattern P starts at 0 and adds 3. Pattern Q starts at 0 and adds 12.

- Write four ordered pairs (P, Q), starting with (0, 0).
- What is the y-value of the pair whose x-value is 15?
- Which of these points is on the graph: (21, 84), (12, 40), (30, 120)?

18 Use all four numbers



Use each of the numbers 8, 3, 2 and 5 exactly once, with the operations $+$, $-$, $\times$, $\div$ (and parentheses if you need them), to write an expression equal to 21.

19 Saving money



Sam saves 6 dollars each week and Ava saves 12 dollars each week. Both start with 0 dollars.

- Write the amounts for weeks 0 to 5.
- Write the ordered pairs (Sam's amount, Ava's amount).
- When Sam has \$42, how much does Ava have?

20 Is it true?



Marco says $4 \times (13 + 9) = 4 \times 13 + 9$. Is he right? Find the value of each side. Then write the version that is correct.

21 Check the points



Mia plots the pairs $(0, 0)$, $(2, 6)$, $(4, 12)$, $(6, 18)$ and says that y is always 3 times x . Is she right? Which of these points are also on her graph: $(5, 15)$, $(8, 24)$, $(10, 20)$?



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