Secondary 4 Mathematics · Practice Worksheet · tutorinmontreal.ca

Arithmetic

Name: _____ Date: _____

Concepts

- Absolute Value Notation - Secondary 4 and 5
- Arithmetic (theory)
- Factorial Notation
- Logarithms
- Operations (theory)
- Rationalizing Fractions
- Representing Number Sets - Secondary 4 and 5
- The Common Denominator - Secondary 4
- The Laws of Exponents
- The Laws of Logarithms
- Writing Numbers (theory)

Absolute Value Notation — Secondary 4 and 5

1. Evaluate or solve, showing your steps.

a) $|-3| \cdot |4-9|$

b) $|9-2| - |2-9|$

c) Solve $|2x-5| = 11$.

Arithmetic (topic overview)

2. Each expression below uses a different piece of notation from this topic. Name the notation, then give the value (or the simplest exact form).

a) $5!$

b) $\log_3 81$

c) $|-2.5|$

d) 10^{-2}

e) $\dfrac{2}{\sqrt{2}}$

Factorial Notation

3. Evaluate without a calculator, simplifying before multiplying.

a) $\dfrac{8!}{6!}$

b) $\dfrac{10!}{3!\,7!}$

Logarithms

4. Evaluate or solve.

a) $\log_2 64$

b) $\log_5 \dfrac{1}{25}$

c) Solve $\log_3 x = 4$.

Operations

5. Nadia and Owen both evaluate $12 - 4 \times (5 - 8)^2 \div 6$. Nadia gets 6; Owen gets 12. Decide who is correct, show the correct evaluation step by step, and state precisely which rule the other student broke.

Rationalizing Fractions

6. Rationalize the denominator and simplify.

a) $\dfrac{6}{\sqrt{3}}$

b) $\dfrac{5}{\sqrt{10}}$

Representing Number Sets — Secondary 4 and 5

7. Write each set in interval notation.

a) all real numbers greater than or equal to -3 and strictly less than 7

b) $\{x \in \mathbb{R} \mid x > 2\}$

c) $[-1, 5] \cap]3, +\infty[$

The Common Denominator — Secondary 4

8. Add or subtract, giving the result in lowest terms.

a) $\dfrac{3}{4} + \dfrac{5}{6} - \dfrac{7}{12}$

b) $\dfrac{2}{3x} + \dfrac{5}{6x}$, and state the restriction on x.

The Laws of Exponents

9. Simplify, leaving no negative exponents.

a) $\dfrac{(2a^3b^{-2})^2 \cdot a^{-1}}{4a^2b^{-5}}$

b) Evaluate $\left(\dfrac{27}{8}\right)^{-2/3}$.

The Laws of Logarithms

10. Use the laws of logarithms.

a) Write $2\log_3 6 - \log_3 4$ as a single logarithm, then evaluate it.

b) Given $\log 2 \approx 0.301$ and $\log 3 \approx 0.477$, find $\log 12$ without a calculator.

Writing Numbers

11. For each number, state whether it is rational or irrational and justify in one short sentence; then write $0.\overline{36}$ as a fraction in lowest terms.

$$0.\overline{36} \qquad \sqrt{49} \qquad \frac{\pi}{2} \qquad 2.5 \times 10^{-3}$$