

Reading the Structure of Expressions

Grade 9 – Algebra 1 math · Test · Standards: A-SSE.A.1a, A-SSE.A.1b, N-RN.B.3

Name: _____ Date: _____ Class: _____

This test has 9 questions worth 20 points in total. Write full sentences for explanations and show every computation. A calculator is allowed. Plan on about 45 minutes.

Standards: A-SSE.A.1a, A-SSE.A.1b, N-RN.B.3 · **Level:** Grade 9 Algebra 1

Time: 45 minutes · 9 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Parts of an expression (2 points)

In the expression $9y^2 - 4y + 11$, list the terms, then give the coefficient of each variable term and the constant term.

Question 2 Name the factors (2 points)

The expression $3a(b + 4)$ is a product. Name all of its factors and say which factor is a sum.

Question 3 Rational or irrational (2 points)

Classify each number as rational or irrational: (a) $\sqrt{81}$ (b) $\sqrt{45}$ (c) 0.375 (d) 3π

Question 4 Kayak rental (3 points)

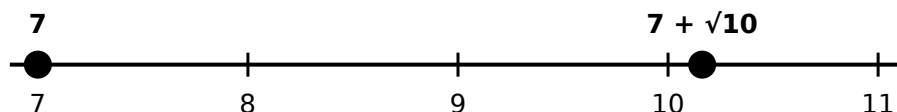
A kayak rental costs $C = 18 + 9.5h$ dollars for h hours. (a) Explain what 18 and 9.5 represent. (1 point) (b) Find the cost for 3.5 hours. (1 point) (c) Which part of the expression gives the total charge for time on the water at 3.5 hours? (1 point)

Question 5 Growth of an investment (3 points)

The value of a fund is $V = 1,500(1.06)^n$ dollars after n years. (a) Give the starting value, the growth factor and the yearly growth rate. (1 point) (b) Find the value after 2 years. (1 point) (c) By how many dollars does the value grow during the first year? (1 point)

Question 6 Sum with a root (2 points)

The number line shows 7 and $7 + \sqrt{10}$ (about 10.16).



Two points on the number line.

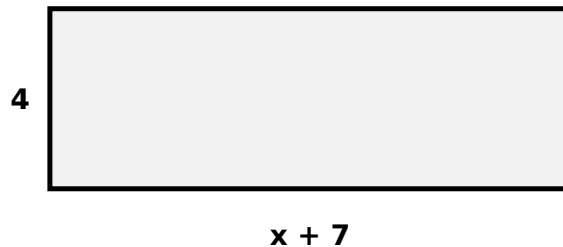
Is $7 + \sqrt{10}$ rational or irrational? Justify your answer.

Question 7 Making rational results (2 points)

(a) Give two irrational numbers whose sum is rational, and state the sum. (1 point) (b) Give two irrational numbers whose product is rational, and state the product. (1 point)

Question 8 Rectangle structure (3 points)

A rectangle has length $x + 7$ and width 4.



Rectangle with length $x + 7$ and width 4.

(a) Write the perimeter as an expression in simplest form. (1 point) (b) Find the area when $x = 5$. (1 point) (c) Interpret the factor 4 in the area expression $4(x + 7)$. (1 point)

Question 9 Area of a circle (1 point)

A circle has radius 5. Is its area $\pi(5)^2$ rational or irrational? Explain.