Readiness Evaluation

Why Evaluate Readiness?

Teaching could be defined as the process of starting with what a student knows and guiding him to added knowledge with new material. While this may not be a dictionary definition of teaching, it is descriptive of the processes involved. Determining a student's readiness for Algebra 1 is the first step to successful teaching.

Types of Readiness

True readiness has little to do with chronological age. Emotional maturity and mental preparation are the main components of academic readiness. The teacher who is dealing directly with the student is best able to determine a child's emotional maturity. All emotionally immature students may need special student training in their problem areas. A child's mental *preparation* can be more easily discerned with a simple diagnostic evaluation. Observing the child's attitude of confidence or insecurity while taking the evaluation may help determine emotional readiness.

Determining Readiness

The Algebra 1 *Readiness Evaluation* on the following pages helps the teacher to determine if student(s) are ready to begin studying math at the Algebra 1 level. Complete this evaluation the first or second day of school.

The evaluation should take 45-60 minutes. It would be helpful to evaluate all of the students to determine what each student knows. However, you may want to evaluate only those student(s) whom you sense have not had a thorough preparation for this course. It is especially important to evaluate any student who is using this curriculum for the first time. The student(s) should be able to complete the test on his own with the teacher making sure he understands the directions for each individual activity.

The answer key follows the test. Count each individual answer as a separate point. The total for the test is 60 points. The student(s) should achieve a score of 42 or more points to be ready to begin Algebra 1. Be sure to note the areas of weakness of each student, even those who have scored over 42 points. Students who score under 42 points may need to repeat a previous math level or do some refresher work in their areas of weakness. For possible review of the identified areas of weakness, refer to the chart *Appearance of Concepts* in the *Horizons Pre-Algebra Teacher's Guide*. It will locate lessons where the concepts were taught.

Horizons Algebra 1 Readiness Evaluation

① Solve, using the rules for signed numbers. **10 points**

(+38) + (+7) =   (5)(-7) =
(-6) + (+44) =   (-9)(6) =
(-3) − (-34) =   (-4)(-20) =
(-18) − (+82) =   (-11)(8)(-1) =
(8)(12) =   (-5)(-12)(-1) =

② Solve, using the rules of absolute values. **6 points**

$\left|-2\right| + \left|-75\right| =$ $-\left|12\right| + \left|-4\right| =$

$\left|-3\right| + \left|56\right| =$ $-\left|-21\right| - \left|-18\right| =$

$\left|75\right| - \left|-9\right| =$ $-\left|16 - 2\right| + \left|6 - 9\right| =$

③ Solve, following the order of operations. **9 points**

$5 + 3 \times 8 =$

$8 \div (2 + 6) + 1 =$

$3 - (7 + 2) + 9 =$

$8^2 - 3^2 \times 4 =$

$4 \times 3^2 - 6 \times 4 =$

$3^2 - 4^2 \div 8 - 7 =$

$5^2 \times (4 - 6^2 \div 9) =$

$2 \times (3^2 + 1) - 5 \times 2 =$

$5 + (1 - 2^2) + 8 =$

④ Simplify the roots. **8 points**

$\sqrt{36} =$ $\sqrt[3]{64} =$

$\sqrt{27} =$ $\sqrt{11} + 4\sqrt{11} =$

$\sqrt{18} =$ $6\sqrt[3]{5} - 2\sqrt[3]{5} =$

$\sqrt[3]{8} =$ $\left(\sqrt{8}\right)\left(\sqrt{2}\right) =$

⑤ Solve. **6 points**

$x + 6 + 5 = 18$ $x + 3x + 3 + 7 = 26$ $5x - 2x + 11 - 4 - 1 = 24$

$-5x < 15$ $2x + 7 > x - 3$ $7x + 9 < 3x + 1$

⑥ Translate the following words into a mathematical expression. Do not solve.   **10 points**

The product of 7 and a number.

The ratio of a number to 8.

A number increased by 29.

The total of a number and 13 is 51.

8 fewer than a number equals 3.

A number times 6 yields 42.

The sum of 16 and a number is 79.

6 less than a number is 19.

A number increased by a factor of 4 gives 32.

51 more than a number is 88.

⑦ Add, subtract, multiply, or divide as indicated.   **8 points**

$$\frac{1}{7}+\frac{4}{7}=$$ $$\frac{2}{5}\times\frac{1}{5}=$$

$$\frac{1}{3}+\frac{1}{6}=$$ $$\frac{5}{8}\times\frac{4}{5}=$$

$$\frac{4}{5}-\frac{3}{5}=$$ $$\frac{3}{8}\div\frac{1}{8}=$$

$$\frac{9}{10}-\frac{3}{4}=$$ $$\frac{5}{8}\div\frac{3}{4}=$$

⑧ Graph the equations.   **3 points**

$$y = x - 3$$ $$y = -4x + 1$$ $$y \geq 2(x + 1)$$

Horizons Algebra 1 Readiness Evaluation Answer Key

① Solve, using the rules for signed numbers. **10 points**

$(+38) + (+7) =$ 38 + 7 = 45

$(-6) + (+44) =$ 44 − 6 = 38

$(-3) - (-34) =$ (-3) + (+34) = 34 − 3 = 31

$(-18) - (+82) =$ (-18) + (-82) = -100

$(8)(12) =$ 96

$(5)(-7) =$ -35

$(-9)(6) =$ -54

$(-4)(-20) =$ 80

$(-11)(8)(-1) =$ (-88)(-1) = 88

$(-5)(-12)(-1) =$ (60)(-1) = -60

② Solve, using the rules of absolute values. **6 points**

$|-2| + |-75| =$ 2 + 75 = 77

$|-3| + |56| =$ 3 + 56 = 59

$|75| - |-9| =$ 75 − 9 = 66

$-|12| + |-4| =$ (-12) + (+4) = -(12 − 4) = -8

$-|-21| - |-18| =$ (-21) − (+18) = (-21) + (-18) = -39

$-|16 - 2| + |6 - 9| =$ (-14) + (+3) = -(14 − 3) = -11

③ Solve, following the order of operations. **9 points**

$5 + 3 \times 8 =$ 5 + 24 = 29

$8 \div (2 + 6) + 1 =$ 8 ÷ 8 + 1 = 1 + 1 = 2

$3 - (7 + 2) + 9 =$ 3 − 9 + 9 = −6 + 9 = 3

$8^2 - 3^2 \times 4 =$ 64 − 9 × 4 = 64 − 36 = 28

$4 \times 3^2 - 6 \times 4 =$ 4 × 9 − 6 × 4 = 36 − 24 = 12

$3^2 - 4^2 \div 8 - 7 =$ 9 − 16 ÷ 8 − 7 = 9 − 2 − 7 = 7 − 7 = 0

$5^2 \times (4 - 6^2 \div 9) =$ 5² × (4 − 36 ÷ 9) = 5² × (4 − 4) = 25 × 0 = 0

$2 \times (3^2 + 1) - 5 \times 2 =$ 2 × (9 + 1) − 5 × 2 = 2 × 10 − 5 × 2 = 20 − 10 = 10

$5 + (1 - 2^2) + 8 =$ 5 + (1 − 4) + 8 = 5 + (−3) + 8 = 5 − 3 + 8 = 2 + 8 = 10

④ Simplify the roots. **8 points**

$\sqrt{36} =$ 6

$\sqrt{27} =$ $\sqrt{3 \times 3 \times 3} = 3\sqrt{3}$

$\sqrt{18} =$ $\sqrt{2 \times 3 \times 3} = 3\sqrt{2}$

$\sqrt[3]{8} =$ $\sqrt[3]{2 \times 2 \times 2} = 2$

$\sqrt[3]{64} =$ $\sqrt[3]{4 \times 4 \times 4} = 4$

$\sqrt{11} + 4\sqrt{11} =$ $5\sqrt{11}$

$6\sqrt[3]{5} - 2\sqrt[3]{5} =$ $4\sqrt[3]{5}$

$(\sqrt{8})(\sqrt{2}) =$ $\sqrt{8 \times 2} = \sqrt{16} = 4$

⑤ Solve. **6 points**

$x + 6 + 5 = 18$

$x + 11 = 18$

$x = 7$

$x + 3x + 3 + 7 = 26$

$4x + 10 = 26$

$4x = 16$

$x = 4$

$5x - 2x + 11 - 4 - 1 = 24$

$3x + 6 = 24$

$3x = 18$

$x = 6$

$-5x < 15$

$-x < 3$

$x > -3$

$2x + 7 > x - 3$

$x > -10$

$7x + 9 < 3x + 1$

$4x < -8$

$x < -2$

⑥ Translate the following words into a mathematical expression. Do not solve.   **10 points**

The product of 7 and a number.	$7x$
The ratio of a number to 8.	$\dfrac{x}{8}$
A number increased by 29.	$x + 29$
The total of a number and 13 is 51.	$x + 13 = 51$
8 fewer than a number equals 3.	$x - 8 = 3$
A number times 6 yields 42.	$6x = 42$
The sum of 16 and a number is 79.	$16 + x = 79$
6 less than a number is 19.	$x - 6 = 19$
A number increased by a factor of 4 gives 32.	$4x = 32$
51 more than a number is 88.	$x + 51 = 88$

⑦ Add, subtract, multiply, or divide as indicated.   **8 points**

$$\frac{1}{7} + \frac{4}{7} = \frac{1+4}{7} = \frac{5}{7}$$

$$\frac{2}{5} \times \frac{1}{5} = \frac{2 \times 1}{5 \times 5} = \frac{2}{25}$$

$$\frac{1}{3} + \frac{1}{6} = \frac{1 \times 2}{3 \times 2} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$$

$$\frac{{}^{1}\cancel{5}}{{}_{2}\cancel{8}} \times \frac{\cancel{4}^{1}}{\cancel{5}_{1}} = \frac{1}{2}$$

$$\frac{4}{5} - \frac{3}{5} = \frac{4-3}{5} = \frac{1}{5}$$

$$\frac{3}{8} \div \frac{1}{8} = \frac{3}{{}_{1}\cancel{8}} \times \frac{\cancel{8}^{1}}{1} = \frac{3}{1} = 3$$
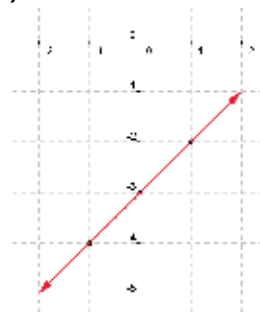
$$\frac{9}{10} - \frac{3}{4} = \frac{9 \times 2}{10 \times 2} - \frac{3 \times 5}{4 \times 5} = \frac{18}{20} - \frac{15}{20} = \frac{3}{20}$$

$$\frac{5}{8} \div \frac{3}{4} = \frac{5}{{}_{2}\cancel{8}} \times \frac{\cancel{4}^{1}}{3} = \frac{5 \times 1}{2 \times 3} = \frac{5}{6}$$
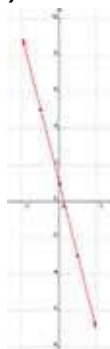
⑧ Graph the equations.   **3 points**

$y = x - 3$

$y = -4x + 1$

$y \geq 2(x + 1)$