Next Generation NY Math Rehearsal® Plus Instruction

Level H

Teacher's Guide and Extended Answer Key

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Instructional Practice with Guides

In the Student Book, the Instructional Practice provides students with 30 practice questions similar in scope and structure to the actual questions in Sessions 1 and 2. In this Teacher Guide, there are guides that the teacher can provide for the student to help them solve each problem.

1   A   8.F.3

Guide: Think about the exponent of *x*.

2   C   8.EE.6

Guide: Substitute the values of the known point into the equation $y = mx + b$ to find the *y*-intercept.

3   B   8.G.7

Guide: Use the Pythagorean Theorem, $a^2 + b^2 = c^2$ to find the missing side.

4   B   8.EE.1

Guide: The fraction line is a grouping symbol. Subtract the exponents to simplify the fraction.

5   D   8.F.2

Guide: Use $y = mx + b$ to find the slope and *y*-intercept of Function A. For Function B, use rise\run to find the slope and look at the graph to find the *y*-intercept.

6   B   8.SP.1

Guide: A negative correlation is one in which both variables are decreasing. A strong correlation exists when the data points are very close together.

7   A   8.G.9

Guide: Solve using the formula $\frac{4}{3}\pi r^3$.

8   A   8.F.4

Guide: Use the slope formula to find the slope of the line. Then use $y = mx + b$ to find the *y*-intercept.

9   8.NS.1

Answers: $\frac{2}{3}$, 1.5, –9, $\sqrt{81}$

Guide: A rational number is any number that can be expressed as a fraction where the denominator is not zero.

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10   *Show Your Work:*   Distance from (–2, 1) to (–2, 9) is 8 units. Distance from (–8, 1) to (–2, 1) is 6 units. $8^2 + 6^2 = 64 + 36 = 100$. The square root of 100 is 10, so the length of the hypotenuse is 10 units.

The distance between the points (–8, 1) and (–2, 9) is 10 units.

Guide: Use the Pythagorean Theorem to find the distance between the two points by forming a right triangle with those points as the vertices.

8.G.8

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11   *Linear Equations:* $4y = 3x$ or $99x + 12 = 23y$

8.F.3

Guide: A linear equation is one that forms a straight line on a graph. Nonlinear equations do not form a straight line.

12   *Possible Reason:*   This equation can be written in $y = mx + b$ form or form a straight line when graphed.

8.F.3

13   *Nonlinear Equation:* $y = x^2 + 3x - 9$

8.F.3

14   *Possible Reason:*   This equation cannot be written in $y = mx + b$ form because the *x* has an exponent of two.

8.F.3

Answer Key

Rehearsal Test 1, Session 1

Multiple-Choice Questions are worth 1 point each.

Question	Answer	Learning Standard	Question	Answer	Learning Standard
1	D	8.G.5	21	B	8.EE.2
2	C	8.SP.1	22	A	8.G.2
3	B	8.F.1	23	C	8.F.3
4	A	8.G.3	24	C	8.SP.1
5	A	8.SP.3	25	D	8.F.4
6	A	8.EE.1	26	C	8.G.7
7	D	8.G.3	27	C	8.EE.6
8	B	8.F.3	28	C	8.EE.5
9	B	8.EE.1	29	D	8.G.3
10	B	8.G.1	30	C	8.SP.3
11	B	8.F.2	31	A	8.F.3
12	B	8.G.5	32	B	8.G.9
13	A	8.SP.1			
14	C	8.F.3			
15	D	8.EE.7a			
16	A	8.G.3			
17	D	8.NS.2			
18	C	8.F.4			
19	B	8.EE.1			
20	A	8.F.2			

Rehearsal Test 1, Session 2

Multiple-Choice Questions are worth 1 point each.

Question	Answer	Learning Standard
1	C	8.EE.8
2	A	8.EE.7
3	B	8.EE.7b
4	A	8.NS.2
5	A	8.EE.8
6	D	8.EE.7b

Each part of a Short-Response Question is worth 1 point.

7   **Answer:** 6^{15}

The exponents are multiplied.

8.EE.1

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8   **Show Your Work:**   Formula for volume of a cylinder: $V = \pi r^2 h$
$V = \pi(2)^2(6.5)$
$V = \pi(4)(6.5)$
$V = \pi(26)$
$V \approx 81.64$ cubic inches

81.64 cubic inches $\times \dfrac{1}{2}$ fluid ounce $= 40.82$ fluid ounces

   Answer: 40.8 fluid ounces (approximately)

8.G.9

9   **Show Your Work:** $\dfrac{4^3}{4^7} = \dfrac{1}{4^4} = 4^{-4}$

OR

$\dfrac{4^3}{4^7} = \dfrac{4 \times 4 \times 4}{4 \times 4 \times 4 \times 4 \times 4 \times 4 \times 4} = \dfrac{4}{4 \times 4 \times 4 \times 4} = \dfrac{1}{256}$

Answer: 4^{-4} OR $\dfrac{1}{256}$

8.EE.1

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10   **Show Your Work:** $5x + 8x - 2 = 180$
$13x - 2 = 180$
$13x = 182$
$x = 14$
$m\angle 2 = 5 \times 14 = 70°$
$m\angle 7 = 70°$ because angles 2 and 7 are congruent.

[Please note: the equation editor used for the NY State tests does not include the "degree" symbol (°). Students may type out the word "degrees" or access the symbol by typing option+shift+8.]

Answer: $m\angle 7 = 70°$

8.G.5

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11   **Show Your Work:** $m = \dfrac{11 - 7}{-3 - -2} = \dfrac{4}{-1} = -4$

$y = mx + b$
$3 = -4(-1) + b$
$3 = 4 + b$
$b = -1$

Answer: Equation: $y = -4x - 1$

8.F.4

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12   **Show Your Work:** $-(2 + 5x) - 4(-2 + x) = 33$
$-2 - 5x + 8 - 4x = 33$
$-9x + 6 = 33$
$-9x = 33 - 6$
$-9x = 27$
$x = -3$

Answer: $x = -3$

8.EE.7b

13   **Show Your Work:**   Speed of car A = $\dfrac{162.5 - 97.5}{2.5 - 1.5}$ = 65 miles per hour

Speed of car B = $\dfrac{140 \text{ miles}}{2 \text{ hours}}$ = 70 miles per hour

70 − 65 = 5

     Answer: Car B is moving 5 miles per hour faster than car A.

8.EE.5

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14   **Show Your Work:**   Volume of large cone = $\dfrac{1}{3}\pi r^2 h = \dfrac{1}{3}\pi \times (2.5)^2 \times 16 \approx 105$ cm^3

Volume of small cone $\approx \dfrac{2}{3} \times 105 = 70$ cm^3

$\dfrac{1}{3}\pi r^2 h = 70$

$\dfrac{1}{3}\pi \times 2^2 h = 70$

$\dfrac{4\pi h}{3} = 70$

$\dfrac{4\pi h}{4}\pi = \dfrac{210}{4}\pi$

$h = 16.7 \text{cm} \approx 17$ cm

[Please note: the equation editor used for the NY State tests does not include the symbol for "approximately equal to" (≈). Students should type out the words "approximately equal to" or similar language in their response.]

     Answer: 17 cm

8.G.9

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15   **Answer:** $y = \dfrac{1}{8}x + 9$

8.EE.5

Each part of the Extended-Response Question is worth 1 point.

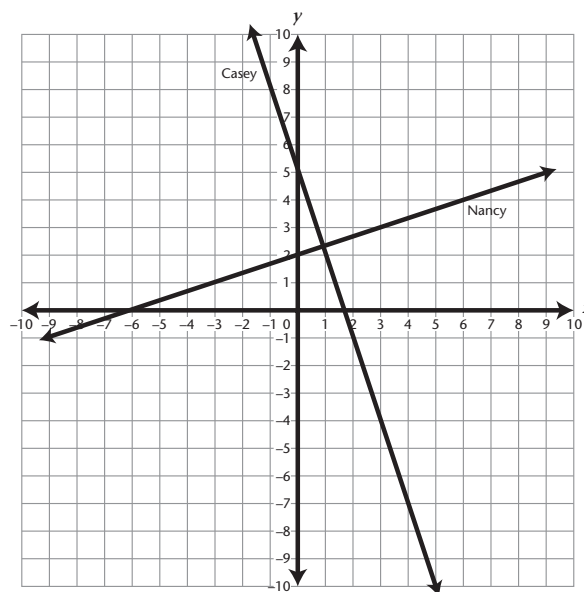16 **Answer:** Casey's line: $m = \dfrac{11 - -7}{-2 - 4} = \dfrac{18}{-6} = -3$

$y = mx + b$
$20 = -3(-5) + b$
$20 = 15 + b$
$b = 5$
$y = -3x + 5$

8.F.2

17 **Answer:** Nancy's line: m = negative reciprocal of $-3 = \dfrac{1}{3}$

$b = 5 - 3 = 2$

$y = \dfrac{1}{3}x + 2$

8.F.2

Rehearsal Test 2, Session 1

Multiple-Choice Questions are worth 1 point each.

Question	Answer	Learning Standard	Question	Answer	Learning Standard
1	A	8.EE.7a	17	C	8.G.5
2	D	8.F.3	18	C	8.EE.5
3	D	8.G.1	19	A	8.F.5
4	B	8.EE.1	20	A	8.EE.5
5	C	8.F.4	21	B	8.SP.3
6	A	8.F.1	22	B	8.SP.3
7	B	8.SP.1	23	D	8.EE.6
8	B	8.G.7	24	A	8.G.3
9	B	8.G.4	25	D	8.EE.7a
10	D	8.EE.1	26	C	8.G.5
11	B	8.NS.2	27	A	8.G.7
12	C	8.F.2	28	C	8.EE.7b
13	C	8.G.3	29	D	8.NS.1
14	B	8.EE.1	30	A	8.F.5
15	D	8.EE.5	31	A	8.F.3
16	B	8.F.3	32	C	8.G.9

Rehearsal Test 2, Session 2

Multiple-Choice Questions are worth 1 point each.

Question	Answer	Learning Standard
1	C	8.SP.3
2	D	8.EE.6
3	C	8.EE.2
4	C	8.EE.1
5	B	8.EE.1
6	B	8.G.9

Each part of a Short-Response Question is worth 1 point.

7 **Show Your Work:**

$0.3x + 0.25 = 0.6x - 0.11$

$0.25 + 0.11 = 0.6x - 0.3x$

$0.36 = 0.3x$

$0.36 \div 0.3 = 0.3x \div 0.3$

$1.2 = x$

Answer: 1.2

8.EE.7b

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8 **Show Your Work:** The line passes through points $(-3, 3)$ and $(6, -6)$.

$$\frac{-6 - 3}{6 + 3} = \frac{-9}{9} = -1$$

$y = -x$

Answer: $y = -x$

8.F.4

9   **Answer:**   A′ = (0, −1)
                              B′ = (8, 9)
                              C′ = (8, −1)
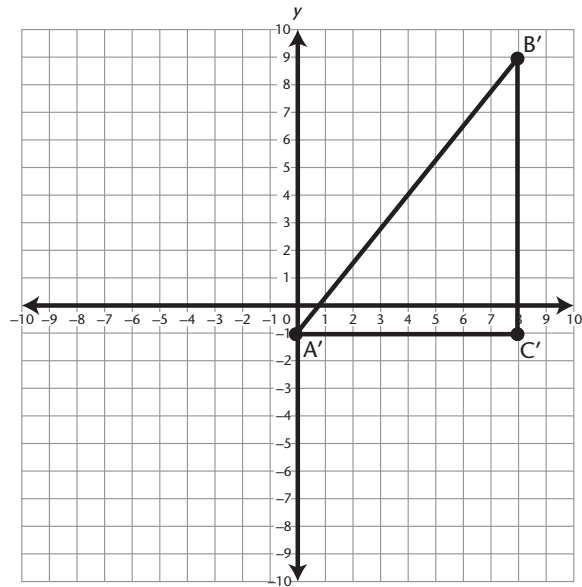
Answer: The translation from triangle ABC to triangle A'B'C' is to move five spaces to the right.

8.G.1a

10   **Show Your Work:**   Function 1: $m = \text{rise}\backslash\text{run} = \dfrac{3}{8}$

Function 2: Each output is 3 times the value of its corresponding input.
This situation can be represented by the equation $y = 3x$.
The slope is 3.

Function 3:

x	y
0	0
1	−2
2	−4
3	−6

$$m = \frac{-2 - 0}{1 - 0} = \frac{-2}{1} = -2$$

Function 4:
$4x + 2y = -10$
Divide each side of the equation by 2.
$2x + y = -5$
$y = -2x - 5$
The slope is -2

Answer: Function 2 has the largest slope.

8.F.2

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11   **Show Your Work:** $-7(-5n + 10) + 1 = 10 + 6n + 8$
$35n - 70 + 1 = 10 + 6n + 8$
$35n - 6n = 10 + 8 + 70 - 1$
$29n = 87$
Divide both sides of the equation by 29.
$n = 3$

Answer: $n = 3$

8.EE.7b

12   **Show Your Work:** $m = \dfrac{-6 - -2}{2 - -6} = \dfrac{-4}{8} = \dfrac{-1}{2}$

$y = mx + b$

$-6 = -\dfrac{1}{2}(2) + b$

$-6 = -1 + b$

$-6 + 1 = b$

$-5 = b$

Answer: Equation: $y = -\dfrac{1}{2}x - 5$

8.F.4

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13   **Show Your Work:** $-8(7x + 1) - 5x = -8$

$-56x - 8 - 5x = -8$

$-61x - 8 = -8$

$-61x = -8 + 8$

$-61x = 0$

$x = 0$

Answer: $x = 0$

8.EE.7b

14   **Show Your Work:**   The trend line includes (0, 100) and (10, 65).

$$m = \frac{65 - 100}{10 - 0} = \frac{-35}{10} = -3.5$$

The graph intersects the y-axis at (0, 100), so the y-intercept is 100.

Answer: Equation: $y = -3.5x + 100$

8.SP.3

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15   **Answer:**   Slope: For every hour of exercise, resting heart rate decreases by about 3.5 beats per minute.

y-intercept: The resting heart rate of a person who does not exercise at all is about 100 beats per minute.

8.SP.3

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16   **Show Your Work:** $\dfrac{8 - 1}{9 - 6}$

Answer: $\dfrac{7}{3}$

8.EE.6

Each part of the Extended-Response Question is worth 1 point.

17 **Show Your Work:** Angles 3 and 4 are alternate exterior angles, so they are congruent.

$2(2x + 43) = 6(1 − x)$
Divide both sides by 2.
$2x + 43 = 3(1 − x)$
$2x + 43 = 3 − 3x$
$2x + 3x + 43 = 3$
$5x + 43 = 3$
$5x + 43 − 43 = 3 − 43$
$5x = −40$
$x = −8$

Answer: $x = −8$

8.G.5

18 **Show Your Work:** Angles 1, 2, and 3 have a sum of 180°.

Let n represent the measure of angle 2.

measure of angle 3 = $[2(2x + 43)] = [2(2 × −8 + 43)] = [2(−16 + 43)]$
$= 2(27) = 54°$

$60 + n + 54 = 180$
$n + 114 = 180$
$n = 180 − 114$
$n = 66°$

[Please note: the equation editor used for the NY State tests does not include the "degree" symbol (°). Students may type out the word "degrees" or access the symbol by typing option+shift+8.]

Answer: $n = 66°$

8.G.5