# For scholars who are enrolled in Algebra 2:

Like all skills, mathematical abilities fade over time if they are not practiced. The purpose of these activities is to give you a list of practice activities to help reactivate the knowledge and abilities you will need to be successful during the upcoming school year or semester. Four options are outlined below. Since this is for you to refresh / relearn these important skills, feel free to pick and choose your way through the 4 options!

Option 1: Khan Academy's *"Get Ready for Algebra 2"* Use this if you consider yourself strong in mathematics.

1. If you already have an account with Khan Academy, login and navigate to the Learner home page.
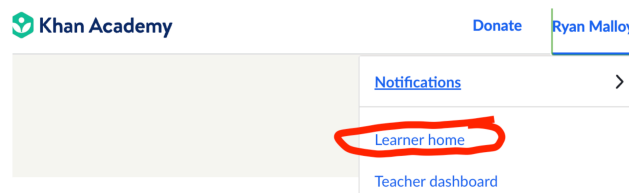
2. From Learner home, select Courses.

3. There is a blue button on the right side of this screen: **Edit Courses** which will open up a list of courses for you to select from.

4. Click the **Start** button followed by the Start Course Challenge. This pre-assessment helps the Academy figure out what you remember, what you may need help remembering, and what you need to learn outright.

Option 2: IXL's *Diagnostic Tool*. Use this if math is typically one of your most difficult subjects. It typically takes about 50 questions for the *Diagnostic Tool* to figure out exactly where you are in your math journey. You are not expected to be able to answer all of them, that's the only way for a diagnostic to figure out where your knowledge stops. Skip the ones you don't understand, but try your best on the ones you think you can answer.

You have to get to IXL through Classlink in order for it to link to your school account:

1. Open the Cheltenham website (Cheltenham.org) and **SIGN IN** using your school email.
2. Select Intranet on the navigation bar:

HOME   DISTRICT INFO   SCHOOL BOARD   DEPARTMENTS   FAMILIES   CONTACT INFO   CALENDARS   SAFETY   INTRANET

3. Select Classlink, you may need to log in again for this website.

❯ Classlink

4. Select the IXL icon.

IXL

5. Select Diagnostic.

Learning   Diagnostic   Analytics

6. Open the drop-down menu and make sure you are only answering Math questions.

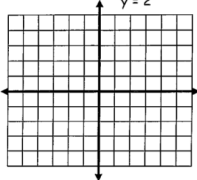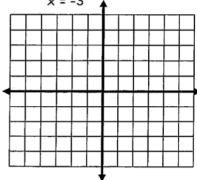**Option 3:** Keystone Topic Packet. These are essential Algebra topics needed for Precalculus.
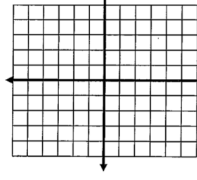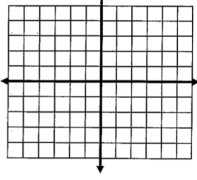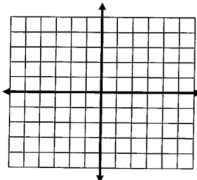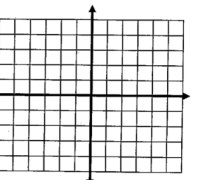
Keystone #1 – Solve an equation.

$3x + 5 = 29$

Solution: _____

$5(x + 7) - 3 = 42$

Solution: _____

$5x - 3 = 7x + 5$

Solution: _____

$|x + 2| = 9$

Solution: _____

$\frac{1}{2}x + 7 = 3x - 18$

Solution: _____

$3|x + 7| - 5 = 22$

Solution: _____

Keystone #2 – Solve and graph an inequality on a number line.

$-2x + 5 \geq 11$

Solution: _____

$5 < 2x - 3 < 21$

Solution: _____

$3x + 9 < 15 \ \text{ or } \ 4x - 2 > 18$

Solution: _____

$|x + 2| > 5$

Solution: _____

$4|x - 3| + 1 \leq 5$

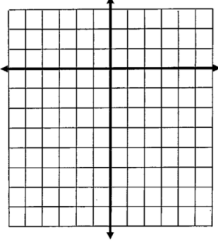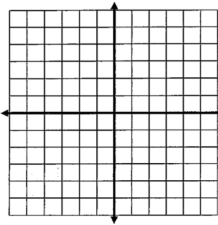Solution: _____

$\frac{1}{2}|x + 5| - 8 > 1$

Solution: _____

Keystone #3 – Graph a line.

$y = 2$

$x = -3$

$y = 2x - 4$

$y = -\frac{1}{4}x + 4$

$2x + 3y = 6$

$x - 2y = -6$

Keystone #4 – Write the equation of a line.

The slope of the line is -2 and the y-intercept is (0, 5).

Slope Intercept Form: _____

Standard Form: _____

The slope of the line is $\frac{1}{4}$ and it passes through the point (-4, -3).

Slope Intercept Form: _____

Standard Form: _____

The line passes through the points (2, 3) and (5, 0).

Slope Intercept Form: _____

Standard Form: _____

The line passes through the points (1, 4) and (5, -1).

Slope Intercept Form: _____

Standard Form: _____

The line is parallel to $y = 3x + 19$ and passes through the point (1, -1).

Slope Intercept Form: _____

Standard Form: _____

The line is perpendicular to the line $y = \frac{2}{3}x - 5$ and passes through the point (2, -2).

Slope Intercept Form: _____

Standard Form: _____

Keystone #5 – Solve a system of linear equations or inequalities.

$x - 3y = 25$ $x - 2y = 21$ Solution: _____	$-5x + y = -3$ $3x - 8y = 24$ Solution: _____
$x + 2y = 6$ $3x - 2y = 2$ Solution: _____	$5x + 4y = -18$ $2x + 3y = -24$ Solution: _____
$y + 2x = -7$ $2y - 4 = 2x$ Solution: _____	$y \leq 2x + 1$ $y > -3x + 4$

Keystone #6 – Manipulate expressions with exponents.

x^{-3}	$(2y)^0$
	$2y^0$
$\left(\dfrac{x^3}{y^4}\right)^2$	$(3x^2)^3$
$\dfrac{12x^2y^4z}{3xy^2z^3}$	$\dfrac{2x^{-1}y^4}{6xy^{-2}}$

Keystone #7 – Add, Subtract, Multiply, and Divide Polynomials.

$(7x^2 - 5x - 4) + (x^2 + 10x + 1)$	$(2x^2 - x + 3) - (7x^2 + 2x - 1)$
$4x(x^2 - 3x + 7)$	$(x - 3)^2$
$(2x + 5)(4x - 1)$	$\dfrac{2x + 14}{x^2 + 6x - 7}$

Keystone #8 – FACTOR.

$4ab^2 + 6a^2b^2 - 12a^2b$	$x^2 + 5x - 14$
$4x^2 - 12x - 72$	$x^2 - 36$
$8x^2 + 18x + 9$	$6x^2 - x - 2$

Keystone #9 – Solve a quadratic equation by factoring.

$a^2 + 7a + 10 = 0$	$x^2 - 8x + 12 = 0$
$6n^2 - 19n = -15$	$x^3 - 7x^2 - 18x = 0$
$y^2 - 49 = 0$	$3b^2 + b - 10 = 0$

Keystone #10 – Simplify a radical expression.

$\sqrt{68}$	$7\sqrt{144}$
$9\sqrt{54}$	$3\sqrt{72}$
$5\sqrt{132}$	$6\sqrt{85}$

Option 4: This is a worksheet covering some of the important Algebra I topics used in Algebra II. The *answers* are on the last page of the packet so you can use them to assess yourself.

Evaluate each expression.

1) $2 + 6 - 6$

2) $2 \times 6 \times 4$

3) $2 \cdot 6 \cdot 4 - 4$
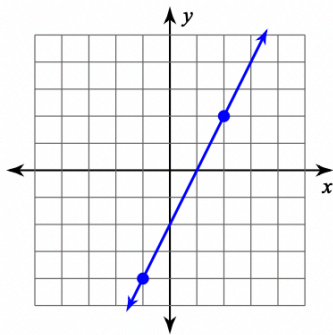
4) $(2 + 1 + 2) \cdot 2$

Evaluate each using the values given.
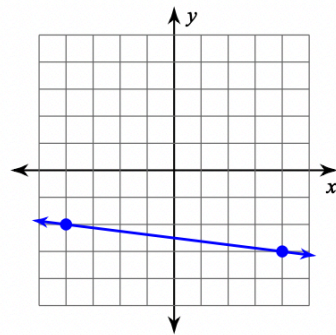
5) $y(y - z - 3)$; use $y = 6$, and $z = 1$

6) $2 + 2q - m$; use $m = 4$, and $q = 5$

Find the slope of each line.

7)

8)

Find the slope of the line through each pair of points.

9) $(-11, -11), (-2, 16)$
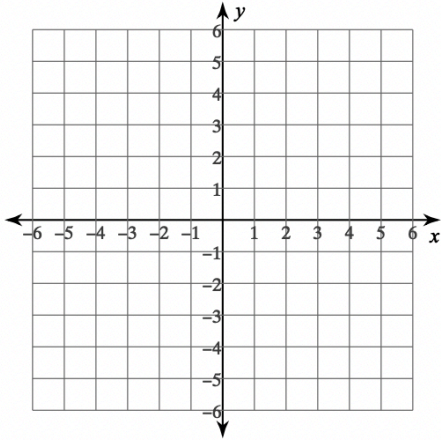
10) $(13, 0), (-16, 17)$
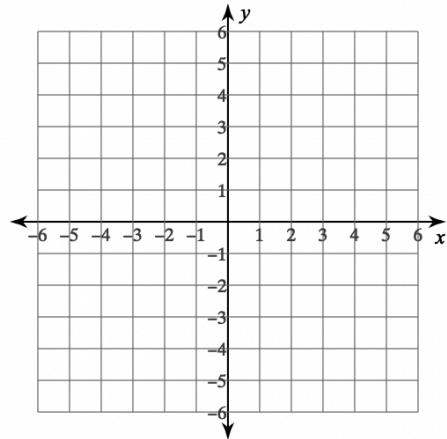
Find the slope of each line.

11) $y = x - 2$

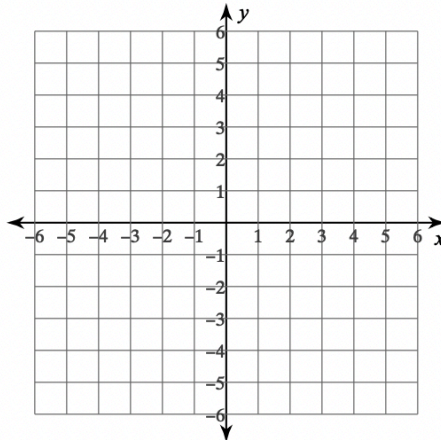12) $y = -\dfrac{3}{5}x - 1$

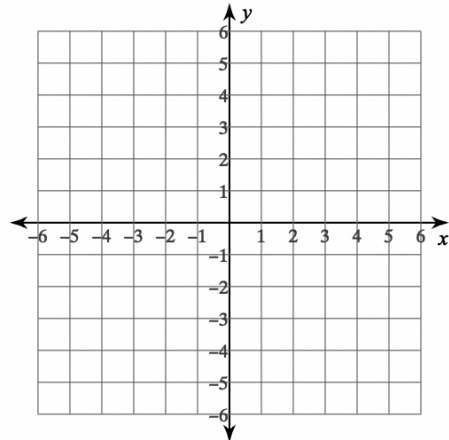Sketch the graph of each line.

13) $y = \dfrac{2}{3}x - 2$

14) $y = 2x - 5$
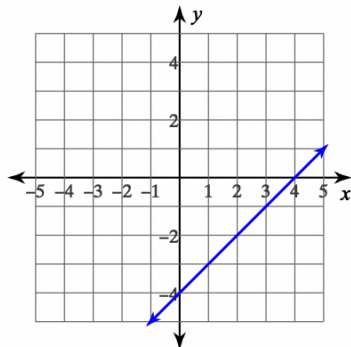
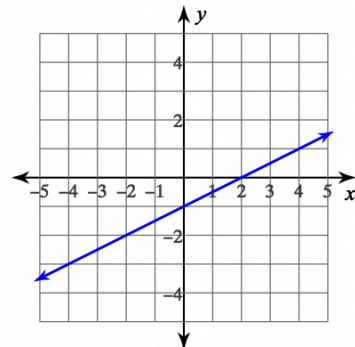15) $6x - 5y = 10$

16) $2x - 3y = 0$

Write the slope-intercept form of the equation of each line.

17)

18)

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

19) Slope $= \dfrac{1}{2}$, y-intercept $= 4$

20) Slope $= 4$, y-intercept $= 3$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

21) through: $(-5, -1)$, slope $= -\dfrac{4}{5}$
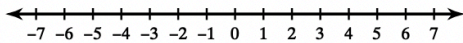
22) through: $(2, 1)$, slope $= -2$

Write the slope-intercept form of the equation of the line through the given points.
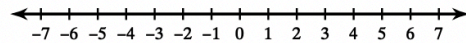
23) through: $(0, 0)$ and $(-2, -4)$

24) through: $(0, -4)$ and $(-2, 5)$
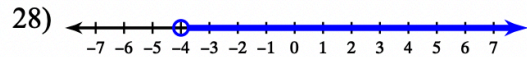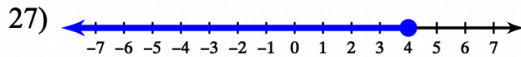
Draw a graph for each inequality.

25) $m \geq 3$

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←+—+—+—+—+—+—+—+—+—+—+—+—+—+→
 -7 -6 -5 -4 -3 -2 -1  0  1  2  3  4  5  6  7
```

26) $k \geq -1$

```
←+—+—+—+—+—+—+—+—+—+—+—+—+—+→
 -7 -6 -5 -4 -3 -2 -1  0  1  2  3  4  5  6  7
```

Write an inequality for each graph.

27)
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←———————————————————●—+—+—+→
 -7 -6 -5 -4 -3 -2 -1  0  1  2  3  4  5  6  7
```

28)
```
←+—+—⊕——————————————————————→
 -7 -6 -5 -4 -3 -2 -1  0  1  2  3  4  5  6  7
```

Solve each equation.

29) $21 = 13 + n$

30) $10 = 4 + x$

31) $5 = 5x$

32) $182 = -13x$

33) $8(4v - 2) = 144$

34) $7(3x + 4) - 6 = 148$

Factor the common factor out of each expression.

35) $30x + 48$

36) $18x^2 + 8$

37) $-16r^7 - 64r^6 - 24r^5$

38) $30m^2 - 24m - 24$

Factor each completely.

39) $m^2 + 3m + 2$

40) $v^2 - 5v - 24$

41) $n^2 - 15n + 56$

42) $x^2 - 16x + 60$

Answers to Assignment (ID: 1)

1) 2   2) 48   3) 44   4) 10

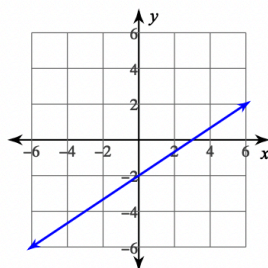5) 12   6) 8   7) 2   8) $-\dfrac{1}{8}$
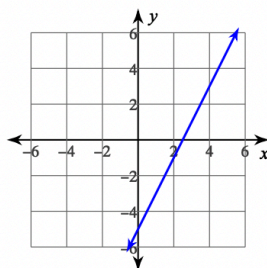
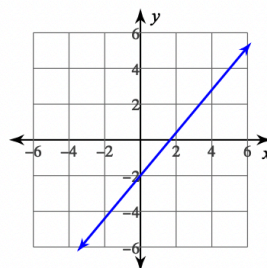9) 3   10) $-\dfrac{17}{29}$ 11) 1   12) $-\dfrac{3}{5}$
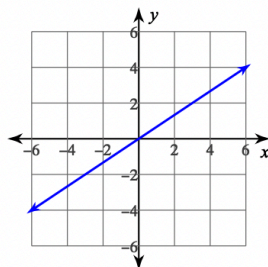
13)

14)

15)

16)

17) $y = x - 4$

18) $y = \dfrac{1}{2}x - 1$

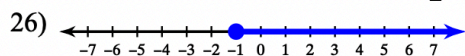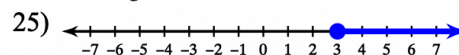19) $y = \dfrac{1}{2}x + 4$

20) $y = 4x + 3$

21) $y = -\dfrac{4}{5}x - 5$

22) $y = -2x + 5$

23) $y = 2x$

24) $y = -\dfrac{9}{2}x - 4$

25)

26)

27) $v \le 4$

28) $k > -4$

29) $\{8\}$ 30) $\{6\}$ 31) $\{1\}$ 32) $\{-14\}$

33) $\{5\}$ 34) $\{6\}$ 35) $6(5x + 8)$ 36) $2(9x^2 + 4)$

37) $-8r^5(2r^2 + 8r + 3)$ 38) $6(5m^2 - 4m - 4)$ 39) $(m + 1)(m + 2)$ 40) $(v - 8)(v + 3)$

41) $(n - 7)(n - 8)$ 42) $(x - 10)(x - 6)$