Get both Algebra Nation workbooks

- 1 course workbook will stay in the classroom. Use a sharpie and put your name on the side of the book on the binder.

- 1 practice workbook will stay with you. It is expected that you bring this book to and from class. You can put your name anywhere on this book.

Algebra Nation Grading

- Each topic will be worth 10 points (just like a worksheet). Will be graded on completion, but will be spot checked for accuracy. As long as topic is completed, you will receive your full points.

- "Check Your Understanding" assignments will be worth 30 (how to access that will be on the next slide)

- Tests will be given periodically to cover topics since previous test.

To Access the "Check Your Understanding"

1) Download the Algebra Nation app, and use your school log in information:

2) Access classlink from the district website, click on algebra nation.

Be sure to use @mypolkschools.net when typing in your username

Consider $f(x) = 2x^2 + 3x + 2$ and $g(x) = 4x^2 - x$.

Write an expression to represent $f(x) + g(x)$.

$$2x^2 + 3x + 2 + (4x^2 - x) = 6x^2 + 2x + 2$$

Write an expression to represent $f(x) - g(x)$.

$$2x^2 + 3x + 2 - (4x^2 x)$$

$$2x^2 + 3x + 2 - 4x^2 + x = -2x^2 + 4x + 2$$

Write an expression to represent $2[f(x)] + 3[g(x)]$.

$$2(2x^2 + 3x + 2) + 3(4x^2 - x)$$

$$4x^2 + 6x + 4 + 12x^2 - 3x = 16x^2 + 3x + 4$$

Let's Practice!

1. Two polynomial functions are given.

$$t^3 - 48t^2 + 78t - 54$$

$$f(t) = \left(\frac{1}{6}t^3 - 8t^2 + 13t - 9\right) 6$$

$6 \cdot \frac{7}{3} = \frac{42}{3} = 14$

$6 \cdot \frac{11}{2} = \frac{66}{2} = 33$

$$g(t) = \left(5t^2 + \frac{7}{3}t^3 - 4t - \frac{11}{2}\right) 6$$

$3 \cdot 2 = 6$

$$30t^2 + 14t^3 - 24t - 33$$

Find $f(t) + g(t)$.

$$t^3 - 48t^2 + 78t - 54 + \left(30t^2 + 14t^3 - 24t - 33\right)$$

$$15t^3 - 18t^2 + 54t - 87$$

Try It!

2. Two polynomial functions are given.

$$x^3 - 10x^2 + 2 6x - 6$$

$$f(x) = \left(\frac{1}{2}x^3 - 5x^2 + 10x - 3\right) \, 2$$

$$h(x) = \left(12 + \frac{3}{4}x - 2x^3 + 3x^2\right) \, 4$$

$$48 + 3x - 8x^3 + 12x^2$$

$-10 - 2x^2$

Find $f(x) - h(x)$.

$$\underline{x^3 - 10x^2} + \underline{20x - 6} \sim \left(\underline{48} + \underline{3x} - \underline{8x^3} \pm \underline{12x^2}\right)$$

$$x^3 - 10x^2 + \underline{20x - 6} - \underline{48} - 3x + 8x^3 - 12x^2$$

$$9x^3 - 22x^2 + 17x - 54$$

A practical application of subtracting polynomials is finding the profit function $P(x)$ for a business given the revenue function $R(x)$ and the cost function $C(x)$.

$$profit = revenue - cost$$
$$P(x) = R(x) - C(x)$$

Let's Practice!

$7x - 2x - 5000$

3. The cost function for a company to produce armbands is $C(x) = 2x + 5000$, where x is the number of armbands. The company sells the armbands for \$7 each. Write the revenue function and the profit function for the company.

$R(x) = 7x$

$P(x) = R(x) - C(x)$
$P(x) = 7x - (2x + 5000)$
$P(x) = 5x - 5000$

Try It!

4. A company uses two different types of shipping boxes. For shipping purposes, the owners need to determine how much bigger the larger box is than the smaller box.

    The volume of the smaller box can be represented by the function $f(x) = x^3 + 12x^2 + 44x + 48$.

    The volume of the larger box can be represented by the function $g(x) = x^3 + 18x^2 + 89x + 72$.

    Write an expression to represent how much bigger the larger box is than the smaller box.

    $g(x) - f(x)$

    $x^3 + 18x^2 + 89x + 72 - (x^3 + 12x^2 + 44x + 48)$

    $6x^2 + 45x + 24$

BEAT THE TEST!

1. Consider the following polynomial functions:

$$f(k) = -4k^4 + 14 + 3k^2$$
$$g(k) = -3k^4 - 14k^2 - 8$$
$$h(k) = 8k^4 - 3 - 10k^2$$
$$r(k) = -k^2 + 12k^4 + 6$$
$$s(k) = -3k^4 + 5k^2 - 1$$
$$t(k) = 4k^4 + 16k^2 - 7$$

Handwritten annotations:

$f(k) + g(k)$
$-4k^4 + 3k^2 + 14 + (-3k^4 - 14k^2 - 8)$

$h(k) - r(k)$

$8k^4 - 10k^2 - 3 - (12k^4 - k^2 + 6)$

Which of the following could result in equivalent expressions?

I. $f(k) + g(k)$ $-7k^4 - 11k^2 + 6$
II. $h(k) - r(k)$ $-4k^4 - 9k^2 - 9$
III. $s(k) \ominus t(k)$

$-3k^4 + 5k^2 - 1 - (4k^4 + 16^2 - 7)$

$-7k^4$

A. ~~I and II~~
B. II and III
C. I and III *(circled)*
D. ~~I, II, and III~~

Assingment: Practice workbook
Section 1: Topic 1

"Check your understaning: Section 1:
Topic 1 in classlink.