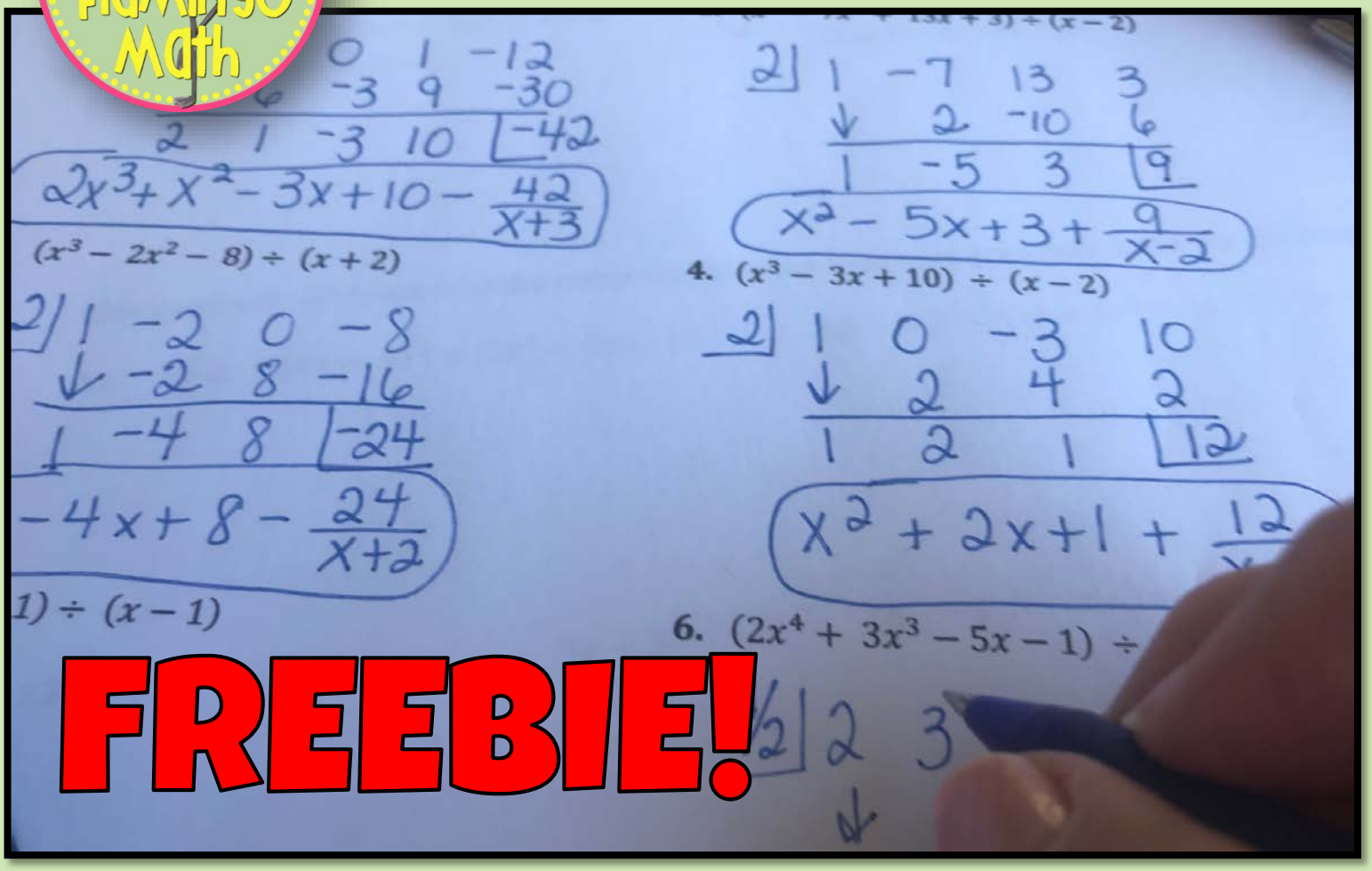
ALGEBRA 2



Remainder and Factor Theorems

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Remainder and Factor Theorem

There are 40 cards in this activity. Students will determine the product of two binomials or find the factors of a polynomial. The activity is meant for Algebra students of all levels.

Teaching Suggestions:

- Use the set as an open sort or closed sort in groups
- Use the cards as a relay activity
- Use the set as a review prior to assessing students
- Use as a sort and match in groups with the recording sheet.
- Use as a glue down activity with the student sheets provided.

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Remainder and Factor Theorem

OBJECTIVE:
To build an understanding of the Remainder and Factor Theorems by providing concentrated practice.

ACTIVITY:
Students will complete questions related to mastery of the concepts for finding roots of polynomials whose degree is greater that two by using synthetic division, Remainder Theorem, and Factor Theorem for upper level mathematics courses.

DIRECTIONS:
Copy a worksheet for each student to complete.

1. $2x^3 + x^2 - 3x + 10 - \frac{42}{x+3}$

2. $x^2 - 5x + 3 + \frac{9}{x-2}$

3. $x^2 - 4x + 8 - \frac{24}{x+2}$

4. $x^2 + 2x + 1 + \frac{12}{x-2}$

5. $x^3 + x^2 + x + 1$

6. $x^3 + 2x^2 + x - 2 - \frac{3}{2x-1}$

7. $P(1) = 0$; $P(-2) = -60$; $P(4) = 6$

8. $P(-2) = 41$; $P(-1) = 15$; $P(1) = -7$

9. $P(2) = 38$; $P(-2) = -118$

10. $P(-2) = 41$ $P(1) = -7$

11. $P(-3) = 0$; $P(2) = 50$

12. $P(-4) = 0$; $P(2) = 72$

13. $P(1) = 0$; $P\left(\frac{1}{2}\right) = 0$

14. $P(-2) = -50$; $P(3) = 0$

15. $P(x) = (x+2)(x-2)(x-3)$

16. $P(x) = (x-1)(x+3)(x+5)$

17. $P(x) = (2x-1)(x-4)(x+2)$

18. $P(x) = (x+3)(x^2 - 4x + 5)$

The Remainder and Factor Theorems

Name _____

Use synthetic division to find the quotient and remainder.

1. $(2x^4 + 7x^3 + x - 12) \div (x + 3)$

2. $(x^3 - 7x^2 + 13x + 3) \div (x - 2)$

3. $(x^3 - 2x^2 - 8) \div (x + 2)$

4. $(x^3 - 3x + 10) \div (x - 2)$

5. $(x^4 - 1) \div (x - 1)$

6. $(2x^4 + 3x^3 - 5x - 1) \div (2x - 1)$

Use direct substitution to find the value of the function.

7. $P(x) = x^3 - 6x^2 + 11x - 6$

Find P(1), P(−2), and P(4)

8. $P(x) = x^3 + 7x^2 - 12x - 3$

Find P(−2), P(−1), and P(1)

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Use synthetic substitution to find the value of the function.

9. $P(x) = 2x^5 - 3x^4 + 2x^3 - x + 8$

Find $P(2)$ and $P(-2)$

10. $P(x) = x^3 + 7x^2 - 12x - 3$

Find $P(-2)$ and $P(1)$

Use synthetic division to determine whether the numbers are roots of the polynomials.

11. $-3, 2$; $P(x) = 3x^3 + 5x^2 - 6x + 18$

12. $-4, 2$; $P(x) = 3x^3 + 11x^2 - 2x + 8$

13. $1, \frac{1}{2}$; $P(x) = 2x^3 + 3x^2 - 8x + 3$

14. -2 , 3 ; $P(x) = x^3 - 5x^2 + 8x - 6$

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

15. $P(x) = x^3 - 3x^2 - 4x + 12$; $x + 2$

16. $P(x) = x^3 + 7x^2 + 7x - 15$; $x - 1$

17. $P(x) = 2x^3 - 5x^2 - 14x + 8$; $2x - 1$

18. $P(x) = x^3 - x^2 - 7x + 15$; $x + 3$

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