APPLYING THE REMAINDER THEOREM

*The Remainder Theorem is a theorem in algebra which states that if **f(x)** is a polynomial in **x** and **f(x)** is divided by **x-c** then the remainder is **f(c).***

Example

If $2x^2-4x+3$ is divided by x-2 then the remainder is f(2).

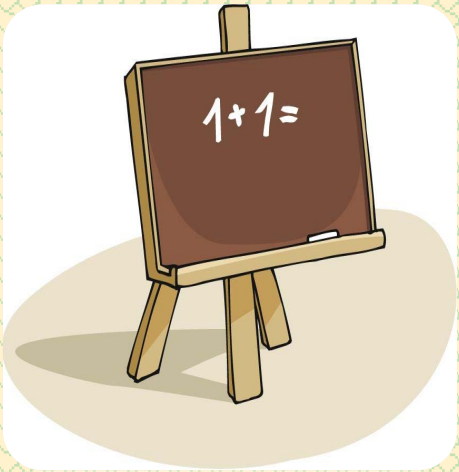
APPLYING THE REMAINDER THEOREM

IF $F(X) = 3X^2-4X+5$ IS DIVIDED BY X+2 THEN:

REMAINDER = $F(-2) = 3(-2)^2-4(-2)+5$ PUTTING X=-2 IN ALL TERMS

$= 3(4)-(-8)+5$ ADDING OR SUBTRACTING TERMS

$= 12+8+5 = 25$ RESULT IS REMAINDER



IF $-2X^3+4X^2-5X+6$ IS DIVIDED BY 2X-3 THEN:

$F(X) = -2X^3+4X^2-5X+6$

REMAINDER = $F(\frac{3}{2})$

$= -2(\frac{3}{2})^3+4(\frac{3}{2})^2-5(\frac{3}{2})+6$ PUTTING X=-3/2 IN ALL TERMS

$= -2(\frac{3^3}{2^3})+4(\frac{3^2}{2^2})-5(\frac{3}{2})+6$ USING $\left(\frac{a}{b}\right)^2 = \frac{a^2}{b^2}$

$= -2(\frac{27}{8})+4(\frac{9}{4})-5(\frac{3}{2})+6$

$= -\frac{54}{8}+\frac{36}{4}-\frac{15}{2}+6$ MULTIPLYING FRACTIONS WITH INTEGERS

$= \frac{-54+36(2)-15(4)+6(8)}{8} = \frac{-54+72-60+48}{8} = \frac{6}{8} = \frac{3}{4}$ TAKING LCM

Meets: Common Core Standard High School – HSA-APR.B.2