BE - Geometry | Tuesday 8-24-10

ACT ① If 60% of a given number is 48, what is 25% of the number?

② A poll of favorite colors was completed. What per cent of the persons polled chose blue?

Color	Favorite
RED	70
orange	40
yellow	60
blue	30

① $0.6x = 48$

$x = \frac{48}{\frac{6}{10}} = \frac{480}{6}$

$x = 80$

$\therefore \frac{25}{100} \cdot 80 = \boxed{20}$

② $\frac{30}{200} = \frac{15}{100}$

$\therefore$ 15% like blue

Homework Review Pg 751 1-28 every 3rd

① $u^2 - 12u = \boxed{u(u-12)}$

④ $2g^2 + 24g = \boxed{2g(g+12)}$

⑦ $z^2 + 10z + 21$

↓

Sum = 10

Prod = 21

$+3 \quad +7$ $\therefore \boxed{(z+3)(z+7)}$

⑩ $x^2 + 14x + 48$

↓

Sum = 14

Prod = 48

$+6 \quad +8$ $\therefore \boxed{(x+6)(x+8)}$

⑬ $g^2 - 9g + 18$

↓

Sum = −9

Prod = 18

$-3 \quad -6$ $\therefore \boxed{(g-3)(g-6)}$

⑯ $k^2 - 4k - 32$

↓

Sum = −4

Prod = −32

$+4 \quad -8$ $\therefore \boxed{(k+4)(k-8)}$

(19) $3z^2 + 4z - 4$

sum = 4

prod = -12

-2 $+6$

$(3z^2 - 2z) + (6z - 4)$

$z(3z - 2) + 2(3z - 2)$ ∴ $\boxed{(3z-2)(z+2)}$

(22) $3s^2 + 11s - 4$

Sum = 11

prod = -12

-1 $+12$

$(3s^2 - 1s) + (12s - 4)$

$s(3s - 1) + 4(3s - 1)$ ∴ $\boxed{(3s-1)(s+4)}$

(25) $w^2 - \frac{9}{4}$ = $\boxed{(w - \frac{3}{2})(w + \frac{3}{2})}$

(28) $b^2 + 18b + 81$

sum = 18

prod = 81

9 9

∴ $\boxed{(b+9)(b+9)}$ or $\boxed{(b+9)^2}$

Lets look closer at $b^2+18b+81$

Just like some numbers are Perfect Squares, so are some trinomials. Which ones?

Distribute $(a+b)^2$ (where a, b are ANY 2 MONOMIALS)

$(a+b)(a+b)$

$a^2+ab+ab+b^2$

$\boxed{a^2+2ab+b^2} = (a+b)^2$

Also $\boxed{a^2-2ab+b^2} = (a-b)^2$

Does $b^2+18b+81$ fit this pattern

$\sqrt{b^2}$ = b ; $\sqrt{81}$ = 9 ; $2 \cdot b \cdot 9$

$\therefore (b+9)^2 = b^2+18b+81$ ✓

CK

$a=1$ $b=18$ $c=81$

$b^2-4ac=d=$ discriminant

$(\ )^2-4(\ )(\ )$

$(18)^2-4(1)(81)$

$324-324=0$ ✓

$d=0 \Rightarrow$ PERFECT SQUARE TRINOMIAL

$d=$ PS $\Rightarrow$ FACTORABLE TRINOMIAL (MAGIC NUMBERS EXIST)

$18 \times 18 = 144 + 180 = 324$

3 step check to see if you have a perfect square trinomial

(Ex) $9x^2 + 6x + 1$

(1) Is $9x^2$ a perfect square?
Yes, $\sqrt{9x^2} = 3x$ ∴ Continue

(2) Is 1 a perfect square?
Yes, $\sqrt{1} = 1$ ∴ Continue

(3) Is $6x$ equal to $2 \cdot 3x \cdot 1$
Yes.

∴ $\boxed{(3x+1)^2} = 9x^2 + 6x + 1$
FACTORS

NOTE: $9x^2 - 6x + 1$

$= \boxed{(3x-1)^2}$

Find d

$a = 9$
$b = -6$
$c = 1$

$b^2 - 4ac$
$(-6)^2 - 4(9)(1)$
$36 - 36 = 0$ ✓

General $(a \pm b)^2 = a^2 \pm 2ab + b^2$

Summary of Factoring Polynomials

1. Check for GCF

2. If binomial – check Difference of Squares

$$a^2 - b^2 = (a+b)(a-b)$$

3. If trinomial – check Perfect Square Trinomial

$$a^2 \pm 2ab + b^2 = (a \pm b)^2$$

Otherwise use Magic Number Method

$$ax^2 + bx + c$$

sum = b

prod = ac

{ ? } { ? }

4. If 4 term – Factor By Grouping

Reorder only once, if FBG works it works 2 out of 3 ways to reorder.

Homework: Pg 751 # 2, 5, 8, 11, 14, 17, 20, 23, 26, 29 (middle column)