

BE - Geometry

Thursday 8-25-11

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?

<u>Color</u>	<u>Favorite</u>
RED	70
orange	40
yellow	60
blue	30

$$\begin{aligned}\textcircled{1} \quad 0.6x &= 48 \\ x &= \frac{48}{\frac{6}{10}} = \frac{480}{6} \\ x &= 80\end{aligned}$$

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

$$\textcircled{2} \quad \frac{30}{200} = \frac{15}{100}$$

$\therefore \boxed{15\% \text{ like blue}}$

Homework Review - Pg 751 1-28 every 3rd

$$\textcircled{1} \quad u^2 - 12u = \boxed{u(u-12)}$$

$$\textcircled{4} \quad 2g^2 + 24g = \boxed{2g(g+12)}$$

$$\textcircled{7} \quad z^2 + 10z + 21$$

$$\downarrow$$
$$\begin{array}{l} \text{sum} = 10 \\ \text{prod} = 21 \end{array}$$

$$\begin{array}{c} \diagup \quad \diagdown \\ +3 \quad +7 \end{array}$$

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

$$\textcircled{10} \quad x^2 + 14x + 48$$

$$\downarrow$$
$$\begin{array}{l} \text{sum} = 14 \\ \text{prod} = 48 \end{array}$$

$$\begin{array}{c} \diagup \quad \diagdown \\ +6 \quad +8 \end{array}$$

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

$$\textcircled{13} \quad g^2 - 9g + 18$$

$$\downarrow$$
$$\begin{array}{l} \text{sum} = -9 \\ \text{prod} = 18 \end{array}$$

$$\begin{array}{c} \diagup \quad \diagdown \\ -3 \quad -6 \end{array}$$

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

$$\textcircled{16} \quad k^2 - 4k - 32$$

$$\downarrow$$
$$\begin{array}{l} \text{sum} = -4 \\ \text{prod} = -32 \end{array}$$

$$\begin{array}{c} \diagup \quad \diagdown \\ +4 \quad -8 \end{array}$$

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

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

$$\text{sum} = 4$$

$$\text{prod} = -12$$

$$\begin{array}{c} \diagup \quad \diagdown \\ -2 \quad +6 \end{array}$$

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

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

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

$$\text{sum} = 11$$

$$\text{prod} = -12$$

$$\begin{array}{c} \diagup \quad \diagdown \\ -1 \quad +12 \end{array}$$

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

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

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

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

$$\text{sum} = 18$$

$$\text{prod} = 81$$

$$\begin{array}{c} \diagup \quad \diagdown \\ 9 \quad 9 \end{array}$$

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

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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
MONOMIALS)

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

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

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

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

Does

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

$$\begin{array}{ccc} \downarrow & & \downarrow \\ \sqrt{b^2} & & \sqrt{81} \\ \text{"} & & \text{"} \end{array}$$

$$b \quad 2 \cdot b \cdot 9 \quad 9$$

$$\therefore (b+9)^2 = b^2 + 18b + 81 \quad \checkmark$$

CK

$$a=1 \quad b^2 - 4ac = d = \text{discriminant}$$

$$b=18 \quad ()^2 - 4()()$$

$$c=81 \quad (18)^2 - 4(1)(81)$$

$$324 - 324 = 0 \quad \checkmark$$

$d=0 \Rightarrow$ PERFECT SQUARE TRINOMIAL

$d=PS \Rightarrow$ FACTORABLE TRINOMIAL (magic numbers exist)

$$\begin{array}{r} 18 \\ \times 18 \\ \hline 144 \\ 180 \\ \hline 324 \end{array}$$

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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, $\sqrt{9x^2} = 3x \therefore$ CONTINUE

② Is 1 a perfect square?
Yes, $\sqrt{1} = 1 \therefore$ CONTINUE

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

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

FACTORS

NOTE: $9x^2 - 6x + 1$
 $= \boxed{(3x - 1)^2}$

Find d $a = 9$ $b^2 - 4ac$
 $b = -6$ $(-6)^2 - 4(9)(1)$
 $c = 1$ $36 - 36 = 0 \checkmark$

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

$$ax^2 + bx + c$$

$$\text{sum} = b$$

$$\text{prod} = ac$$



- 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)