

U1L3 - Factoring Quiz (Pratice) K ____/18

Note: The actual quiz will be much shorter.

Factor by grouping.

K/2

1) $12x^3 + 15x^2 + 4x + 5$

2) $20n^3 - 25n^2 + 16n - 20$

$= 3x^2(4x + 5) + 1(4x + 5)$

$= 5n^2(4n - 5) + 4(4n - 5)$

$= (4x + 5)(3x^2 + 1)$

$= (4n - 5)(5n^2 + 4)$

Factor each Difference of Squares completely. (Don't forget to check for common factors!) K/2

3) $20v^2 - 45$

4) $9p^2 - 25$

$= 5(4v^2 - 9)$

$= (3p - 5)(3p + 5)$

$= 5(2v - 3)(2v + 3)$

Factor each Perfect Square completely.

6) $25r^2 - 30r + 9$

roots $5r$ 3

$2(5r)(3) \text{ K/2}$
 $= 30r \therefore \text{square}$

5) $4p^2 - 20p + 25$

$= (2p - 5)^2$

root of 1st

sign on middle term

root of 2nd

\times	$+$
10	-20

$-10, -10$
 SQUARE

$= (5r - 3)^2$

Factor each completely. Note - check for common factors!

K/4

$$7) 4x^2 + 24x - 64$$

$$= 4(x^2 + 6x - 16)$$

$$= 4(x + 8)(x - 2)$$

$$\begin{array}{r|l} \times & + \\ 16 & 6 \end{array}$$

8, -2

$$8) n^4 + 15n^3 + 54n^2$$

$$= n^2(n^2 + 15n + 54)$$

$$= n^2(n + 9)(n + 6)$$

$$\begin{array}{r|l} \times & + \\ 54 & 15 \end{array}$$

9, 6

Factor each completely. Note - there are no common factors here.

K/8

$$9) 2n^2 + 9n + 9$$

$$= 2n^2 + 6n + 3n + 9$$

$$= 2n(n + 3) + 3(n + 3)$$

$$= (n + 3)(2n + 3)$$

$$\begin{array}{r|l} \times & + \\ 2 \times 9 & 9 \\ 18 & \end{array}$$

6, 3

$$10) 7x^2 + 22x + 3$$

$$= (7x + 1)(x + 3)$$

$$\begin{array}{r|l} 7x + 1 & x \\ x + 3 & 21x \end{array}$$

$$11) 6n^2 - n - 2$$

$$\begin{array}{r|l} \times & + \\ -12 & -1 \end{array}$$

$$\Rightarrow n^2 - n - 12$$

4, +3

$$\Rightarrow \left(n - \frac{4}{6}\right)\left(n + \frac{3}{6}\right)$$

$$\Rightarrow \left(n - \frac{2}{3}\right)\left(n + \frac{1}{2}\right)$$

$$\Rightarrow (3n - 2)(2n + 1)$$

$$12) 9r^2 + 22r + 8$$

$$\begin{array}{r|l} 8 \times 9 & \\ \downarrow & \\ \times & + \\ 72 & 22 \end{array}$$

$$= 9r^2 + 4r + 18r + 8$$

$$= r(9r + 4) + 2(9r + 4)$$

$$= (9r + 4)(r + 2)$$

$$\begin{array}{r} 72 \\ 1 \quad 72 \\ 2 \quad 36 \\ 3 \quad 24 \\ \hline 4 \quad 18 \end{array}$$