

Solve by Decomposition

When using decomposition, you need to look for two numbers, p and q , that add to b and multiply to $(a)(c)$.

Steps:

Find two numbers, p and q , that multiply to (ac) and add to b

Decompose the middle term into the two numbers px and qx

Common factor the 1st and 2nd half

Leftovers and Brackets

Example:

$$20x^2 - 7x - 6$$

$$= 20x^2 - 15x + 8x - 6$$

$$= 5x(4x - 3) + 2(4x - 3)$$

$$\begin{array}{r} \textcircled{\times} - 120 \\ \textcircled{+} \rightarrow \\ \hline 1, 120 \\ 2, 60 \\ 3, 40 \\ 4, 30 \\ 5, 24 \\ 6, 20 \\ 8, 15 \end{array}$$

$$0 = (4x - 3)(5x + 2)$$

$$4x - 3 = 0$$

$$4x = 3$$

$$x = \frac{3}{4}$$

$$5x + 2 = 0$$

$$5x = -2$$

$$x = -\frac{2}{5}$$

$$5.5. \left\{ \frac{3}{4}, -\frac{2}{5} \right\}$$

$$= 7v^2 + 35v - 1v - 5$$

$$= 7v(v+5) - 1(v+5)$$

$$\begin{array}{r} \textcircled{\times} -35 \\ \textcircled{+} +34 \\ \hline -1, 35 \end{array}$$

$$= (v+5)(7v-1)$$

$v+5=0$
 $v=-5$

$7v-1=0$
 $7v=1$
 $v=\frac{1}{7}$

SS $\frac{1}{7}, \frac{1}{7}$

$$10a^2 - 73a - 56$$

Course: Grade 10 Mathematics

$$= \frac{10a^2 + 7a - 80 - 56 + -73}{10}$$

$10a^2 - 73a - 56$

$X - 560$

$$\begin{array}{r} 8 \overline{) 70} \\ 10 \overline{) 56} \\ 7 \overline{) -80} \end{array}$$

$$= 10(10a + 7) - 8(10a + 7)$$

$$(10a + 7)(10a - 8)$$

$$\begin{aligned} 10a + 7 &= 0 \\ 10a &= -7 \\ \frac{10a}{10} &= \frac{-7}{10} \\ a &= -\frac{7}{10} \end{aligned}$$

$$\begin{aligned} 10a - 8 &= 0 \\ 10a &= 8 \\ a &= \frac{8}{10} \end{aligned}$$

$$S.S \left\{ -\frac{7}{10}, 8 \right\}$$

$$4x^2 - 12xy - 27y^2$$