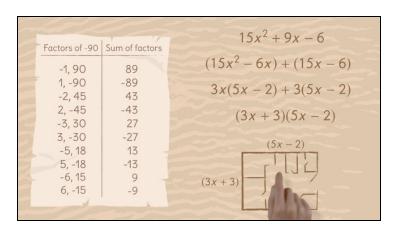
Printable Worksheets from sofatutor.com

# **Factoring by Grouping**



	<b>`</b>
(1	Complete the following table of factors and sums.
\ .	, .

	$\frown$	Explain how to factor				
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١		LAPIAIII HOW to lactor	the given	quadratic	porymonnai	by grouping.

$$\bigcirc$$
 Factor the polynomial  $15x^2+9x-6$ 



The complete package, **including all problems**, **hints**, **answers**, **and detailed answer explanations** is available for all sofatutor.com subscribers.



# Complete the following table of factors and sums.

Fill in the blanks.

Factors of -	90 Sum of factors	Facto	rs of -90	Sum of factors
-1 90	0 89	3	-30	2
1 -9	0 -89	-5	18	13
-2	1 43	5	3	4
2 -4	5 -43		5 15	6
-3 30	27	6	-15	-9
-3 30	27	6	-15	-9

## Hints for solving these problems



# Complete the following table of factors and sums.

#### Hint #1

The product of a pair of factors must be -90. If you know one factor, just divide -90 by that factor to get the other factor in the pair.

#### Hint #2

 $-9 \times 10 = -90 \text{ and } -9 + 10 = 1$ 

An example of a pair of factors of  $\,-90$  and their sum:



### Answers and detailed answer explanations for these problems



### Complete the following table of factors and sums.

**Answer key:** 1: 45 // 2: -27 // 3: -18 // 4: -13 // 5: -6 // 6: 9

For 
$$15x^2 + 9x - 6$$
, we first multiply  $15 \times -6 = -90$ .

We then know that we are looking for all pairs of factors of -90, and one pair in particular which sum up to 9.

Let's calculate the products and sums of all pairs of factors of -90:

• 
$$-1 \times 90 = -90$$
 and  $-1 + 90 = 89$ 

• 
$$1 \times (-90) = -90$$
 and  $1 - 90 = -89$ 

$$ullet$$
  $-2 imes45=-90$  and  $-1+90=89$ 

• 
$$2 \times (-45) = -90$$
 and  $2 - 45 = -43$ 

• 
$$-3 \times 30 = -90$$
 and  $-3 + 30 = 27$ 

• 
$$3 \times (-30) = -90$$
 and  $3 - 30 = -27$ 

$$ullet$$
  $-5 imes 18 = -90$  and  $-5 + 18 = 13$ 

$$ullet$$
  $5 imes(-18)=-90$  and  $5-18=-13$ 

$$ullet$$
  $-6 imes15=-90$  and  $-6+15=9$ 

• 
$$6 \times (-15) = -90$$
 and  $6 - 15 = -9$ 

We can now see that the pair -6 and 15 satisfies our requirements:  $-6\times15=-90$  as well as -6+15=9.

