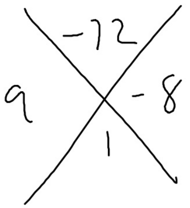
Factor each completely.

$12c^2 + cd - 6d^2$

$= (4c+3d)(3c-2d)$



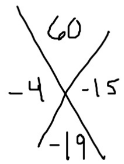
	$4c$	$+3d$
$3c$	$12c^2$	$9cd$
$-2d$	$-8cd$	$-6d^2$

Factor each completely.

to make factoring easier, always try to make the leading term positive. In this problem, factor out a -1 from all terms then continue factoring.

$-6a^2 + 19a - 10$

$-1(6a^2 - 19c + 10)$



	$3a$	-2
$2a$	$6a^2$	$-4a$
-5	$-15a$	$+10$

$\rightarrow \boxed{(3a-2)(2a-5)}$

Expand. $(x - 9)^2$ $\quad x^2 \overset{2(-9)}{-18x} \overset{9^2}{+81}$

Factor. $m^2 + 24m + \underbrace{144}$ $\quad (m+12)^2$

$\sqrt{144} = 12$

$24 = 2 \times 12$

since the constant is a perfect square and b is equal to the square root of the constant doubled....

Factor each.

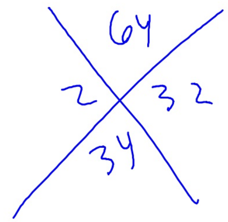
1. $g^2 - 12g + 36$

since the middle term is equal to the square root of 36 then doubled this will result in:

$(g-6)^2$

2. $c^2 + 34c + 64$

in this case the middle term isn't the square root of 64 doubled so we just factor as we always do:



$\boxed{(c+2)(c+32)}$

if $(a+b)^2 = a^2 + 2ab + b^2$

then, $a^2 + 2ab + b^2 = (a+b)^2$

Perfect Square Trinomials

Find the value of b such that this trinomial could be factored as $(\quad)^2$. Then show its factored form.

$w^2 - bw + 100 = (w - 10)^2$

these are the same sign

20

The middle term should be:

Take the square root of "c" then double it.

Expand. $(3c + 7)^2$

$9c^2 + 42c + 49$

$(3c)^2 + (2)(3)(7)c + (7)^2$

Factor. $4k^2 - 36k + 81$

$\sqrt{4}$ $\sqrt{81}$

2 9

$2 \times 9 = \boxed{18}$

Since the middle term is two of these (18)

it will factor this way: $(2k - 9)^2$

this sign is the same
as the sign of the middle
term in the original problem

Factor. $25g^2 + 60g + 36$

$\sqrt{25}$ $\sqrt{36}$

5 6

since 5x6=30 and the middle term(b) is two of these (60) the final answer will be

$\boxed{(5g + 6)^2}$

Factor. $4m^2 + 20m + 9 =$ (2m + 1)(2m + 9)

$\sqrt{4}$ $\sqrt{9}$

2 3

2x3=6 but the "b" term isn't two of these(12)
so I can't factor this quick way. This means we continue
factoring the same way we factor any other trinomial.

36

2 18

20

	2m	+1
2m	$4m^2$	+2m
+9	+18m	+9

Find the value of b such that this trinomial could be factored as ( )^2. Then show its factored form.

$49n^2 - bn + 36 = (7n-6)^2$

$\sqrt{49}=7$ $\sqrt{36}=6$

$b = 2(7)(6) = 84$

Factor completely.

$$\frac{1}{8}\cdot 8\left(\frac{1}{8}x^2 + \frac{1}{4}x - 3\right)$$

$$= \frac{1}{8}\left(x^2 + 2x - 24\right)$$

$$= \boxed{\frac{1}{8}(x+6)(x-4)}$$

By mulitplying by 8 and 1/8 it's just like you've multiplied by 1. However, I chose to distribute only the 8 in order to eliminate all the denominators, making the trinomial easier to factor. Once the trinomial is factored I simply include the 1/8 as one of the factors in the final answer.

Factor completely.

$$\frac{1}{6}\,6\left(\frac{1}{6}x^2 - \frac{1}{2}x - \frac{14}{3}\right)$$

$$= \frac{1}{6}\left(x^2 - 3x - 28\right)$$

$$= \boxed{\frac{1}{6}(x-7)(x+4)}$$

Factor completely.

$\frac{1}{3}\cdot 3\left(\frac{2}{3}m^2 - \frac{14}{3}m - 12\right)$

$= \frac{1}{3}(2m^2 - 14m - 36)$

$= \boxed{\frac{1}{3}(2m+4)(m-9)}$