Homework Review - p. 586

(37) $f(x) = -x^2 + 16x - 28$

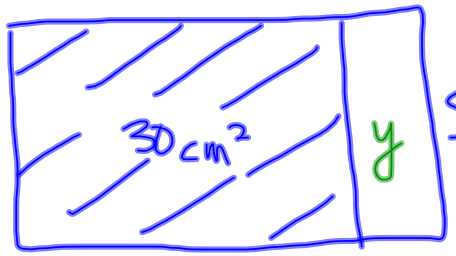
$(-1) \cdot 0 = (-x^2 + 16x - 28) \cdot (-1)$

$0 = x^2 + -16x + 28$

$0 = (x - 14)(x - 2)$

$x = 14$ or $x = 2$

59



$5 \cdot 2 = 10\ cm^2$

$s(s+1) = 30$

$5 \cdot 2 = y$

$(s+1+2)(s) = 30 + y$

$s^2 + s = 30$

$-30 \quad -30$

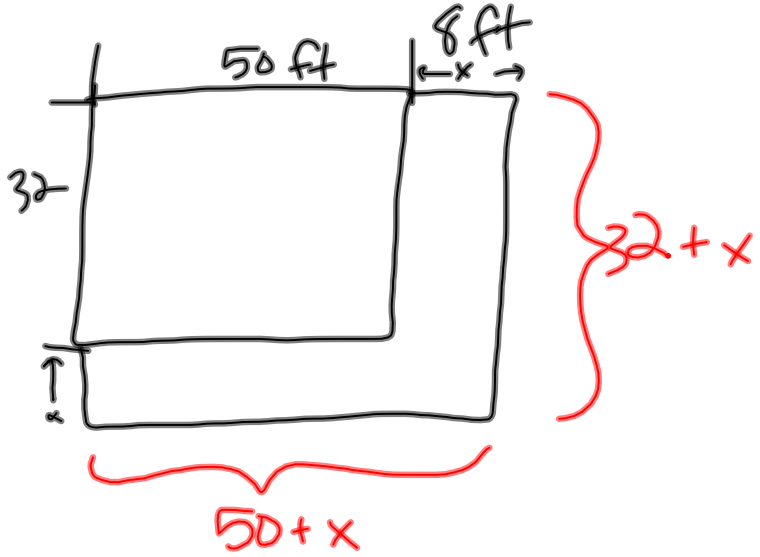
$s^2 + s + -30 = 0$

$(s+6)(s-5)$

$s = -6$ or $s = 5$

-1	30
-2	15
-3	10
-5	6

(60)



$(x + 32)(x + 50) =$

$x^2 + 82x + 1600 = 2320$

$-2320 \quad -2320$

$x^2 + 82x + {}^{-}720 = 0$

$(x + 90)(x - 8) = 0$ $\quad -9 \quad 80$

$x = -90$ or $x = 8$ $\quad -8 \quad 90$

(39) $s(s+1)=72$

$s^2+s=72$

$s^2+s-72=0$

$(s+9)(s-8)=0$

$s=-9 \quad s=8$

Announcements:

Skills Test on Mon. 12/12
Factoring / exponents

Unit Test (Chapter 8 and 9) on Thurs. 12/15

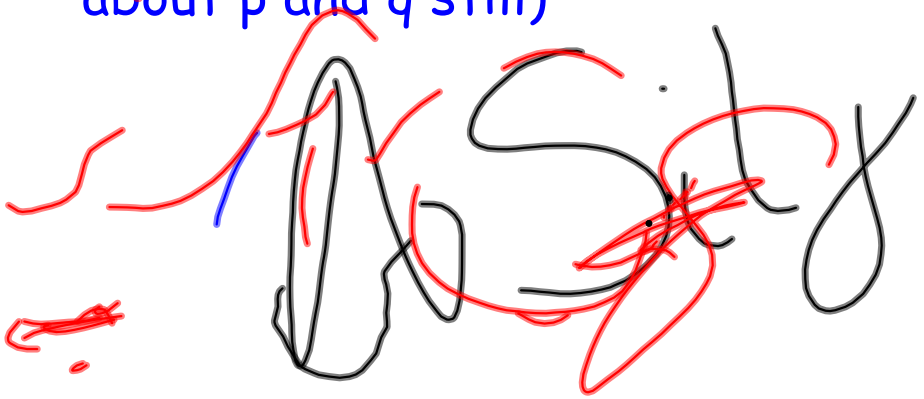
Factoring $ax^2 + bx + c$:

$(2x+3)(-x-2)$ (answer)

$-2x^2-7x-6$ START

We're still reverse-multiplying

...but now we have to consider the factors of a and how they interact to produce b (c is all about p and q still)



How to factor...

$$2x^2 - 7x + 3$$

Factors of 2	Factors of 3	Possible combos	Middle term
1, 2	-1, -3	$(x-1)(2x-3)$	$-5x$
1, 2	-3, -1	$(x-3)(2x-1)$	$-7x$

$(x+-1)(2x+-3)$

$2x^2 - 3x - 2x = -5x$

$(x+-3)(2x+-1)$

$-x + -6x = -7x$

List the factors of a and the factors of c (order matters for the factors of c so each set of factors will be listed at least twice)

Make a list of possible binomial factor pairs (use the same rules as before to determine whether the factors are addition or subtraction)

Check each pair to see if it produces the correct b

Use "oi" to test . . .

4. $2y^2 + 15y + 7$

1,2 1,7 (y+1)(y+7)
1,2 7,1 (y+7)(2y+1)

5. $3a^2 - 13a + 4$

1,3 1,4 (a-1)(3a-4) -7a
1,3 4,1 (a-4)(3a-1) -13a
1,3 2,2 (a-2)(3a-2) -8a

7. $6c^2 + 7c + 2$

1,6 1,2 (c+1)(6c+2) 8c
1,6 2,1 (c+2)(6c+1) 13c
2,3 1,2 (2c+1)(3c+2) 7c
2,3 2,1 (2c+2)(3c+1) 8c

8. $10n^2 - 26n + 12$

1,10 1,12 22
1,10 12,1 121
1,10 2,6 26 (n-2)(10n-6)
1,10 6,2 62
1,10 3,4 34
1,10 4,3 43
2,5 1,12 29
2,5 12,1 62
2,5 2,6 22
2,5 6,2 34
2,5 3,4 21
2,5 4,3 26 (2n-4)(5n-3)

What if *c* is negative?

$$3n^2 + 14n - 5$$

Factors of 3	Factors of -5	Possible combos	Middle term
1, 3	-1, 5	$(n-1)(3n+5)$	$2n$
1, 3 3, 1	5, -1	$(n+5)(3n-1)$	$14n$
1, 3	1, -5	$(n+1)(3n-5)$	$-2n$
1, 3	-5, 1	$(n-5)(3n+1)$	$-14n$

We know the binomial factors will have one addition and one subtraction - but there's no easy way to tell which combination of numbers goes with which

So ... we have to try all combinations

6. $5d^2 - 18d - 8$

1,5 −1,8 3
1,5 8,−1 39
1,5 1,−8 −3
1,5 −8,1 −39
1,5 −2,4 −6
1,5 4,−2 18
1,5 2,−4 6
1,5 −4,2 −18

$(d-4)(5d+2)$

1,12
2,6
3,4

9. $12w^2 + 8w - 15$

1,12 −1,15 3
1,12 15,−1 X
1,12 −3,5 −31
1,12 5,−3 57
2,6 −1,15 24
2,6 15,−1 X
2,6 3,−5 ~~8~~ 8
2,6 5,−3 24
3,4 −1,15 41
3,4 15,−1 57
3,4 −3,5 3
3,4 5,−3 11

$(2w+3)(6w-5)$

What if *a* is negative?

$$\frac{-4x^2+12x+7}{-1} = -1(4x^2-12x-7)$$

Factor out -1...

Then proceed as before...

Holy moly this gets complicated...

Factors of 4	Factors of -7	Possible combos	Middle term
1, 4	-1, 7	$(x-1)(4x+7)$	3x
1, 4	7, -1	$(x+7)(4x-1)$	27x
1, 4	1, -7	$(x+1)(4x-7)$	-3x
1, 4	-7, 1	$(x-7)(4x+1)$	-27x
2, 2	-1, 7	$(2x-1)(2x+7)$	12x
2, 2	1, -7	$(2x+1)(2x-7)$	-12x

$$-1(2x+1)(2x-7)$$

10. $-2b^2 - 5b + 12$

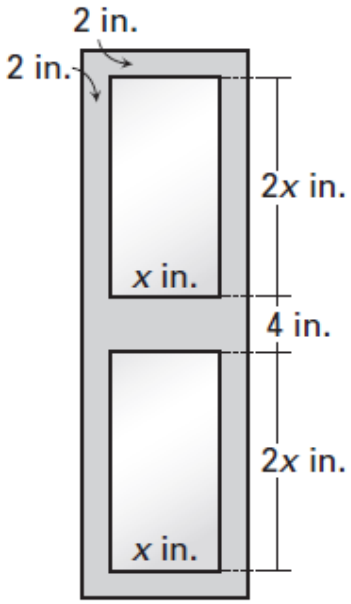
11. $-3r^2 - 17r - 10$

12. $-4s^2 + 6s + 4$

Wall Mirror You plan on making a wall hanging that contains two small mirrors as shown.

a. Write a polynomial that represents the area of the wall hanging.

b. The area of the wall hanging will be 480 square inches. Find the length and width of the mirrors you will use.



Homework:

p. 596, 4-21, 23-37 odd, 43-47 odd, 59