Ch.4 Factoring + Trig Test Version 3

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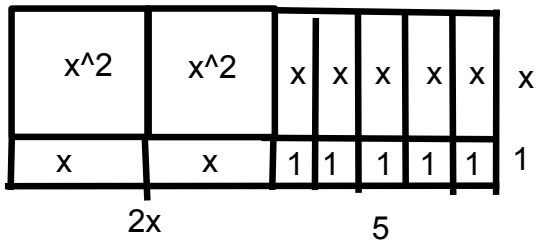
Date: 12/4/2020 Pd. 1

Read all directions carefully.
Watch out for simple, careless errors.
Make sure all figures are labeled appropriately.
Please indicate all answers clearly so they are easy to locate.
Show ALL work you have done to receive full credit for your answer.

1) (5 pts.) Draw a rectangle using algebra tiles for the expression $2x^2 + 7x + 5$. Sketch your rectangle and write the area as a sum and as a product.



(x+1)(2x+5)

2x² + 7x + 5

2) (3 pts.) **Multiple Choice:** The quadratic expression $6x^2 + 6x - 12$ has several possible sets of factors. Which set of factors below is not a possible answer? Explain how you know.

a. $6(x-1)(x+2)$
(6x - 6)(x + 2)

b. $(6x-6)(x+2)$ 6x² + 12x - 6x - 12 = 6x² + 6x - 12

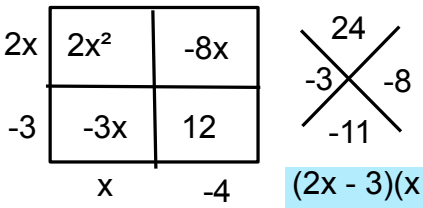
c. $(x-6)(6x+2)$
6x² + 2x - 36x -12
6x² - 34x - 12

d. $(3x-3)(2x+4)$
6x² + 12x - 6x - 12 = 6x² + 6x - 12

C is not a possible answer because it does not simplify to 6x² + 6x - 12

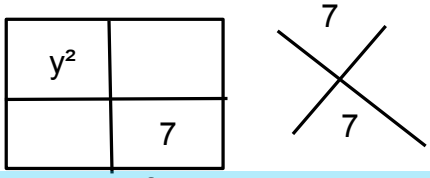
3) (8 pts) Factor the following quadratics if possible. If a quadratic cannot be factored, explain why not.

a. $2x^2 - 11x + 12$



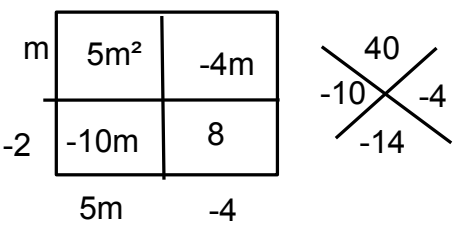
(2x - 3)(x - 4)

b. $y^2 + 7y + 7$



cannot be factored because no numbers multiply to 7 and add to 7 at the same time

c. $5m^2 - 14m + 8$



(m - 2)(5m - 4)

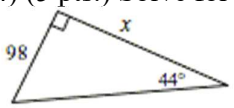
d. $\frac{15p^2 - 3p}{3p} \rightarrow$ 3p(5p - 1)

Ch.4 Factoring + Trig Test Version 3

Name:_____

Date:_____ Pd._____

4) (5 pts.) Solve for the missing side length. Show your work. Round lengths to the nearest tenth.



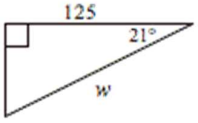
tan44° = 98/x

tan(44)x = 98

x = 98/tan(44)

x ≈ 101.5

5) (5 pts.) Use trigonometric ratios to solve for the variable. Show your work. Round lengths to the nearest tenth.



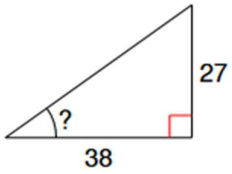
cos21° = 125/w

cos(21)w = 125

w = 125/cos(21)

w ≈ 133.9

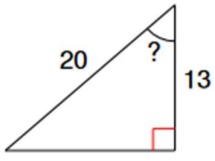
6) (3 pts.) Solve for the missing angle. Show your work.



$\tan^{-1}(27/38) = \Theta$

35.4° ≈ Θ

7) (3 pts.) Solve for the missing angle. Show your work.



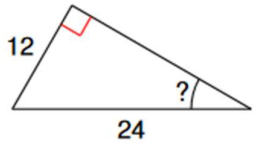
$\cos^{-1}(13/20) = \Theta$

49.46° ≈ Θ

Ch.4 Factoring + Trig Test Version 3 Name:_____

Date:_____ Pd._____

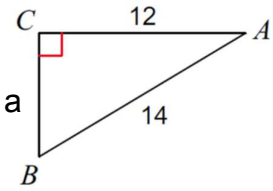
8) (3 pts.) Solve for the missing angle. Show your work.



$\sin^{-1}(12/24) = \Theta$

$30° = \Theta$

9.) (6 pts.) Solve the triangle for all missing side lengths and angle measures. Show your work to receive full credit.



$\angle A =$ 31°

$\angle B =$ 59°

$a =$ 7.2

Angle A:

$\cos^{-1}(12/14) = \Theta$

$31° \approx \Theta$

Angle B:

$\sin^{-1}(12/14) = \Theta$

$59° \approx \Theta$

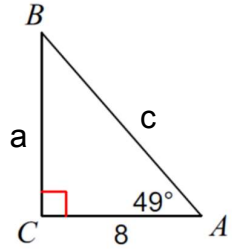
a:

$\tan 31° = a/12$

$\tan(31)12 = a$

$7.2 \approx a$

10) (6 pts) Solve the triangle for all missing side lengths and angle measures. Show your work to receive full credit.



$\angle B =$ 41°

$a =$ 9.2

$c =$ 12.2

c:

$\cos 49° = 8/c$

$\cos(49)c = 8$

$c = 8/\cos(49)$

$c \approx 12.2$

a:

$\tan 49° = a/8$

$\tan(49)8 = a$

$9.2 \approx a$

Angle B:

$\tan^{-1}(8/9.2) = \Theta$

$41 \approx \Theta$

Ch.4 Factoring + Trig Test Version 3 Name:_____

Date:_____ Pd._____

Bonus) (4 pts) Factor each of the expressions below, if possible. Show your work.

a. $169x^2 - 289$

↓ ↓

13x 17

(13x - 17)(13x + 17)

b. $x^2 + 10x + 25$

↓ ↓

x 5

check: 2(1)(5)=10

(x + 5)²

c. $16x^2 - 8x + 1$

↓ ↓

4x 1

check: 2(4)(1) =8

(4x - 1)²

←↑→↓

d. $x^2 - \frac{1}{4}$

1/2² = 1/4

x² - 1/2²

(x - 1/2)(x + 1/2)