DAY 3 - Common Factoring - GCF

Find the greatest common factor then record the expression in factored form

1. $3x + 6y$
$= 3(x+2y)$

2. $17ac - 34ad$
$= 17a(c - 2d)$

3. $-24xy + 16x^2y^2$
$= -8xy(3 - 2xy)$

4. $27x^3y^3 + 18x^2y^2 + 9xy$
$= 9xy(3x^2y^2 + 2xy + 1)$

5. $-6n^2p^2 + 12np^2 + 36n^3p^3$
$= -6np^2(n - 2 - 6n^2p)$

6. $33c^4d^3e^2 - 11c^2de$
$= 11c^2de(3c^2d^2e - 1)$

7. $3x + 15$
$= 3(x+5)$

8. $4x^2 + 8x$
$= 4x(x+2)$

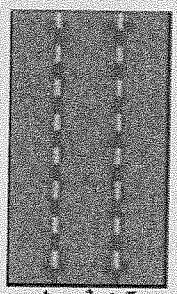
9. $15x^2 - 10x$
$= 5x(3x-2)$

10. $-10x^2 + 20x - 30$
$= -10(x^2 - 2x + 3)$

11. $-9x^2 - 3x + 9$
$= -3(3x^2 + 1x - 3)$

12. $4x^2 - 6x + 8$
$= 2(2x^2 - 3x + 4)$

13. A swimming pool has the area shown.
   a) Factor completely the expression representing the area to determine the length and the width of the swimming pool.
   b) Find the actual measures of its sides if $x = 2$ m.
   c) Find the perimeter of the pool.



a) $A = x(x+5)$
$\therefore L = x$
$W = x+5$

b) $L = 2$ m
$W = 2+5 = 7$ m

c) $P = 2L + 2W$
$= 2(2) + 2(7)$
$= 4 + 14$
$= 18$ m

14. Find the dimensions of each rectangle.

a) $A = 21x^2 + 3x$

b) $A = 2x^2 + 18x$

a) $A = 3x(7x+1)$
$\therefore L = 3x$
$W = 7x+1$

b) $A = 2x(x+9)$
$\therefore L = 2x$
$W = x+9$

15. Lilly wants to laminate some posters. Suppose the area of one poster is represented by $4x^2 + 6x$, where x is measured in metres.
   a) Factor the expression.
   b) What are the dimensions of the poster?

(a) $A = \frac{4x^2}{2x} + \frac{6x}{2x}$

$= 2x(2x+3)$ •

(b) $L = 2x$

$W = 2x+3$ •

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16. The area of a tennis court is represented by $60x^2 + 75x$. What are the dimensions of the tennis court?

$A = \frac{60x^2}{15x} + \frac{75x}{15x}$

$= 15x(4x+5)$ •

$\therefore L = 15x$

$W = 4x+5$ •

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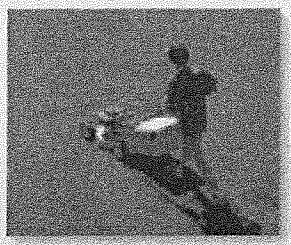
17. Two neighbouring lawns, the areas of which are represented by the binomials $2x^2 + 7x$ and $2x^2 + 9x$, are combined to form one large mowing contract. The shape of the combined lawns is rectangular.



a) Find an expression to represent the area of the combined lawns.
b) Factor the expression in part a) to determine the dimensions of the combined lawns.
c) What are the actual dimensions of the combined lawns if $x = 13$ m?

(a) Combine: $2x^2 + 7x + 2x^2 + 9x$

$= 4x^2 + 16x$ •

(b) $A = \frac{4x^2}{4x} + \frac{16x}{4x}$

$= 4x(x+4)$ •

$\therefore L = 4x$

$W = x+4$ •

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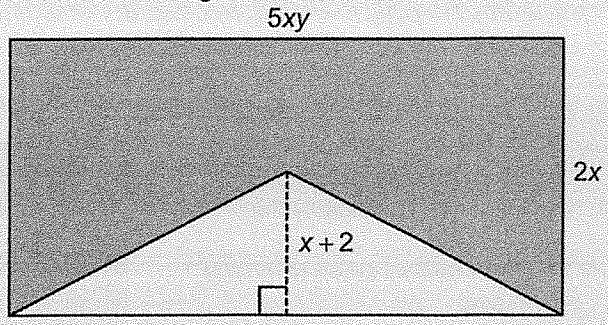
(c) $L = 4(13) = 52$ m

$W = 13+4 = 17$ m •

18. Write an expression in factored form for the area of the shaded region.



$A_{shaded} = \square - \triangle$

$= LW - \frac{BH}{2}$ 1/4

$= (2x)(5xy) - \frac{(5xy)(x+2)}{2}$ •

$= 10x^2y - \frac{1}{2}(5x^2y + 10xy)$

$= 10x^2y - 2.5x^2y - 5xy$

$= 7.5x^2y - 5xy$ ••

$= xy(7.5x - 5)$

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