

FMPC 10 - Ch. 2 Test - Polynomials

PRACTICE TEST /25

Multiple Choice

Identify the choice that best completes the statement or answers the question. You MUST show all of your work for each question.

_____ 1. Identify the greatest common factor of the terms in the trinomial $6s^3t^4 + 12s^4t^2 - 15s^2t^3$.

- a. $6s^2t^2$
- b. $3s^2t^2$

- c. $3s^2t^3$
- d. $3s^3t^2$

G.C.F. of 6, 12, 15 is $\rightarrow 3$
 $s^3, s^4, s^2 \rightarrow s^2$
 $t^4, t^2, t^3 \rightarrow t^2$

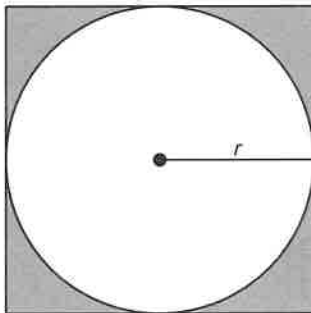
_____ 2. Factor the binomial $15y^2 - 48y$.

- a. $3(5y^2 - 16y)$
- b. $3y(5y - 16y)$

G.C.F. of 15 and 48 is 3
of y^2 and y is y

c. $y(15y - 48)$
 d. $3y(5y - 16)$ $\therefore 15y^2 - 48y = 3y(5y - 16)$

_____ 3. Which expression represents the area of the shaded region?



Area of shaded region = Area of square - Area of circle

$$= 2r \times 2r - \pi r^2$$

$$= 4r^2 - \pi r^2$$

$$= r^2(4 - \pi)$$

a. $2r(2r - \pi)$

b. $r^2(1 - \pi)$

c. $r^2(4 - \pi)$

d. $r(r - 2\pi)$

b 4. Factor $3x^2 + x - 4$ completely

- a. $(3x-4)(x+1)$ c. $(3x-1)(x+4)$
 (b.) $(3x+4)(x-1)$ d. $(3x+1)(x-4)$

AC METHOD $x^2 + x - 12$ $(x+4)(x-3)$ $(x+\frac{4}{3})(x-\frac{3}{3})$	=	$(3x+4)(x-1)$
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b 5. Expand and simplify: $(6p+3)(5p-6)$

- a. $30p^2 + 21p - 18$ c. $30p^2 + 51p - 18$
 (b.) $30p^2 - 21p - 18$ d. $30p^2 - 51p - 18$

$$(6p+3)(5p-6) = 30p^2 - 36p + 15p - 18 = 30p^2 - 21p - 18$$

C 6. Expand and simplify: $(5m-3n)^2$

- a. $25m^2 - 9n^2$ (c.) $25m^2 - 30mn + 9n^2$
 b. $25m^2 - 15mn + 9n^2$ d. $25m^2 + 9n^2$

$$(5m-3n)^2 = (5m-3n)(5m-3n) = 25m^2 - 15mn - 15mn + 9n^2$$

C 7. Expand and simplify: $(4d-1)(5d^2+12d-3)$

- a. $20d^3 + 53d^2 + 3$ (c.) $20d^3 + 43d^2 - 24d + 3$
 b. $20d^3 + 48d^2 - 12d + 3$ d. $20d^3 + 43d^2 + 3$

$$(4d-1)(5d^2+12d-3) = 20d^3 + 48d^2 - 12d - 5d^2 - 12d + 3$$

d 8. Factor: $16p^2 - 81q^2$

- a. $(4p-9q)^2$ c. $(16p-9q)(p-9q)$
 b. $(4p+9q)^2$ (d.) $(4p+9q)(4p-9q)$

difference of squares $a^2 - b^2 = (a+b)(a-b)$

$$\therefore 16p^2 - 81q^2 = (4p)^2 - (9q)^2 = (4p+9q)(4p-9q)$$

Name: _____

ID: A

9. Factor: $25c^2 - 20c + 4$ $\xrightarrow{\text{by inspection}}$ $(5c-2)(5c-2)$ or $\xrightarrow{\text{AC Method}}$ $c^2 - 20c + 100$
p. 149 in workbook

(C-10)(C-10)
 $(c - \frac{10}{25})(c - \frac{10}{25})$
 $(c - \frac{2}{5})(c - \frac{2}{5})$
 $= (5c-2)(5c-2)$

a. $(5c-2)^2$
b. $(5c-2)(5c+2)$
c. $(10c-4)^2$
d. $(10c-4)(10c+4)$

Short Answer

10. Factor using the AC Method or by Grouping: $3x^2 + 8x + 4$ (3 marks)

$x^2 + 8x + 12$ ← factors of 3×4 that have a sum = +8 are +6, +2
... rewrite as
 $3x^2 + 6x + 2x + 4$
group... $(3x^2 + 6x) + (2x + 4)$
factor $3x(x+2) + 2(x+2) = (x+2)(3x+2)$

$(x+6)(x+2)$
 $(x + \frac{6}{3})(x + \frac{2}{3})$
 $= (x+2)(3x+2)$

11. Expand and simplify: $(x-4)^3$

$(x-4)(x-4)(x-4) = (x-4)(x^2 - 4x - 4x + 16) = (x-4)(x^2 - 8x + 16)$
 $= x^3 - 8x^2 + 16x - 4x^2 + 32x - 64 = x^3 - 12x^2 + 48x - 64$

12. Factor: $t^2 + 9t - 36$

$= (t+12)(t-3)$

13. Factor: $v^2 - 13v + 36$

$= (v-9)(v-4)$

14. Factor: $-24 - 5x + x^2$

$= x^2 - 5x - 24$
 $= (x-8)(x+3)$

15. Factor using the AC Method or by Grouping: $10 - 20n + 30n^2$. (3 marks)

$$30n^2 - 20n - 10$$

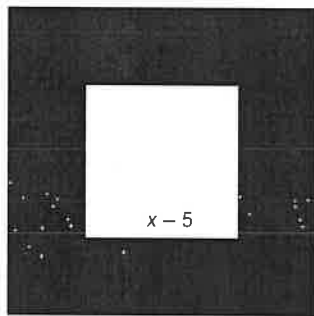
$$10(3n^2 - 2n - 1)$$

$$\boxed{\begin{array}{l} n^2 - 2n - 3 \\ (n-3)(n+1) \\ (n-\frac{3}{3})(n-\frac{1}{3}) \end{array}} = 10(n-1)(3n-1)$$

16. Factor: $49s^2 - 64t^2$

$$\text{difference of squares} = (7s)^2 - (8t)^2 = (7s+8t)(7s-8t)$$

17. Determine the area of the shaded region.



$2x+7$

$$(2x+7)(2x+7) - (x-5)(x-5)$$

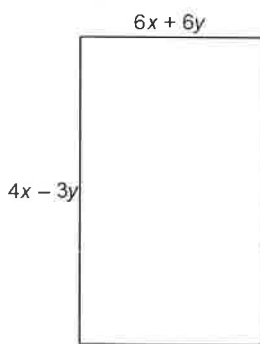
$$4x^2 + 14x + 14x + 49 - (x^2 - 5x - 5x + 25)$$

$$4x^2 + 28x + 49 - x^2 + 10x - 25$$

$$= 3x^2 + 38x + 24$$

Problem

18. Write a polynomial to represent the area of this rectangle. Simplify the polynomial.



$$(6x+6y)(4x-3y)$$

$$24x^2 - 18xy + 24xy - 18y^2$$

$$24x^2 + 6xy - 18y^2$$

19. Find an integer to replace \square so that $x^2 + \square x - 30$ can be factored. How many integers can you find?

(3 marks)

FACTORS OF -30		sum
1	-30	-29
-1	30	29
2	-15	-13
-2	15	13
3	-10	-7
-3	10	7
5	-6	-1
-5	6	1

8 integers