3.7 ~~XXX~~ Complete Factoring
* all work on seperate sheet

What Do You Call a Sore on a Police Officer's Foot ?

Factor completely each polynomial below. Find your answer and notice the letter next to it. Write this letter in the box containing the number of that exercise.

(1) $3x^2 - 15x + 18$
(2) $x^3 + 11x^2 + 10x$
(3) $8x^3 - 18x$
(4) $5x^3 - 40x^2 + 60x$
(5) $4x^2 + 8x - 60$
(6) $2x^3 - 20x^2 - 48x$

Answers:

(I) $5x(x + 3)(x - 4)$
(N) $2x(2x + 3)(2x - 3)$
(L) $2x(x + 6)(x - 4)$
(O) $3(x - 2)(x - 3)$
(C) $4(x + 5)(x - 3)$
(A) $x(x + 5)(x + 3)$
(S) $4(x + 5)(x - 1)$
(E) $x(x + 10)(x + 1)$
(H) $2x(x - 12)(x + 2)$
(O) $5x(x - 2)(x - 6)$
(R) $2x(4x + 9)(x + 1)$

(7) $4m^2 - 18m + 14$
(8) $15m^3 + 24m^2 + 9m$
(9) $15m^2 - 10m - 25$
(10) $50m^3 - 2m$
(11) $3m^2 - 10m + 8$
(12) $60m^3 + 54m^2 - 6m$

Answers:

(O) $3m(5m + 3)(m + 1)$
(S) $5(3m + 1)(m - 5)$
(R) $(3m - 4)(m - 2)$
(F) $2(2m + 1)(m + 7)$
(T) $5(3m - 5)(m + 1)$
(M) $6m(5m - 1)(2m - 1)$
(H) $3m(5m + 2)(m - 1)$
(N) $2(2m - 7)(m - 1)$
(P) $2m(5m + 1)(5m - 1)$
(C) $6m(10m - 1)(m + 1)$
(L) $(3m - 2)(m + 4)$

5	8	11	7	1	3	9	6	2	12	4	10

OBJECTIVE 3–q: To factor polynomials completely (excludes factoring by grouping).

Old Lawyers Never Die, They Just

14	12	5	4	1	10	4	7	9	2	13	13	4	2	14

Old Skiers Never Die, They Just

8	12	3	12	6	11	10	7	14	14

YOU MAY HAVE HEARD THAT OLD MATH TEACHERS NEVER DIE, THEY JUST REDUCE TO LOWEST TERMS. TO FIND OUT WHAT HAPPENS TO OLD LAWYERS AND SKIERS, FOLLOW THESE DIRECTIONS:

Factor completely each polynomial below. Find your answer in the appropriate answer column and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it.

Answers for 1–7:

(C) $(3x + 5)(x - 2)$

(I) $5x(2x - 7)(x + 1)$

(T) $2(x + 2)(x + 9)$

(Y) $a(x + 6)(x + 2)$

(S) $x^2(x + 10)(x - 2)$

(D) $2x(3x + 7)(3x - 7)$

(M) $x^2(x + 4)(x - 5)$

(B) $2(x + 3)(x + 6)$

(A) $5x(x - 4)(x + 2)$

(F) $2x(9x - 7)(x + 7)$

(W) $(3x + 10)(x + 1)$

(K) $5x(2x - 1)(x + 7)$

(F) $a(x - 3)(x - 4)$

(1) $2x^2 + 22x + 36$

(2) $5x^3 - 10x^2 - 40x$

(3) $18x^3 - 98x$

(4) $ax^2 - 7ax + 12a$

(5) $x^4 + 8x^3 - 20x^2$

(6) $3x^2 + 13x + 10$

(7) $10x^3 - 25x^2 - 35x$

(8) $12u^2 - 28u - 24$

(9) $u^4 - 3u^2 - 4$

(10) $15u^4 + 2u^3 - u^2$

(11) $2u^2v - 18uv + 28v$

(12) $12u^3 + 36u^2 + 27u$

(13) $40u^2 + 15u - 55$

(14) $u^4 - 10u^2 + 9$

Answers for 8–14:

(H) $u^2(5u - 1)(3u + 1)$

(V) $3u(4u + 3)(u + 3)$

(L) $(u + 1)(u - 1)(u + 3)(u - 3)$

(N) $2v(u - 7)(u - 2)$

(K) $4(3u + 6)(u - 1)$

(B) $(u^2 + 9)(u + 1)(u - 2)$

(G) $4(3u + 2)(u - 3)$

(M) $u^2(15u + 1)(u - 1)$

(P) $5(8u + 11)(u - 1)$

(U) $2v(u + 14)(u + 1)$

(R) $(u^2 + 1)(u + 2)(u - 2)$

(F) $5(4u + 11)(2u + 1)$

(O) $3u(2u + 3)^2$

OBJECTIVE 3–q: To factor polynomials completely (excludes factoring by grouping).

What Happens to People Who Don't Know Toothpaste From Putty ?

Factor completely each polynomial. Find your answer below and notice the letter next to it. Write this letter in each box containing the number of that exercise.

(1) $3x^3 + 21x^2 + 30x$

(2) $x^4 + x^3 - 56x^2$

(3) $x^2 + 5x + xy + 5y$

(4) $36x^3 - 64x$

(5) $x^2 - xd + 7x - 7d$

(6) $35x^2 - 100x - 15$

(7) $xy + 8x - y^2 - 8y$

(8) $2ax^2 - 22ax + 60a$

(9) $x^4 - y^4$

(10) $x^3 - 9x + 5x^2 - 45$

(11) $2ax^2 + 8ax + x + 4$

(12) $x^4 - 29x^2 + 100$

(13) $x^2y^2 - y^2 - 15x^2 + 15$

(14) $8x^4 + 56x^3 + 98x^2$

Answers:

(V) $x^2(x + 28)(x + 2)$

(N) $(x + y)(x + 5)$

(F) $(x - y)(y + 8)$

(R) $3x(x + 5)(x + 2)$

(S) $(x + 7)(x - d)$

(M) $(x - 2y)(y + 4)$

(A) $x^2(x + 8)(x - 7)$

(E) $5(7x + 1)(x - 3)$

(K) $(x - 7)(x^2 + d)$

(T) $4x(3x + 4)(3x - 4)$

(Y) $5(7x - 1)(2x + 3)$

Answers:

(D) $(2ax + 1)(x + 4)$

(B) $(x + 5)(x - 5)(x^2 + 3)$

(W) $2x^2(2x + 7)^2$

(U) $(x^2 + y^2)(x + y)(x - y)$

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

(H) $2a(x - 6)(x - 5)$

(P) $(2ax - 4)(x + 1)$

(O) $(y^2 - 15)(x + 1)(x - 1)$

(I) $(x + 5)(x + 3)(x - 3)$

(G) $(y^2 - 15)(x + 5)(x - 2)$

(C) $2a(x + 15)(x - 2)$

4	8	6	10	1	14	10	3	11	13	14	5	7	2	12	12	13	9	4

OBJECTIVE 3–t: To factor polynomials completely (includes factoring by grouping).

What Should You Say If You See a Tall, Wrought-Iron Tower in Paris, France?

Factor completely each polynomial. Find your answer below and notice the two letters next to it. Write these letters in the two boxes above the exercise number at the bottom of the page.

(1) $3n^2 - 17n + 24$

(2) $4x^3y - 49xy^3$

(3) $5x^2 + 20xy - 60y^2$

(4) $3x^3 - x^2y + 12x - 4y$

(5) $2x^4y - 3x^3y - 20x^2y$

(6) $9x^3y + 33x^2y^2 + 30xy^3$

(7) $16a^3b^4 + 40a^2b^5 + 8ab^3$

(8) $t^4 - 37t^2 + 36$

(9) $2a^7b^3 - 288ab$

(10) $35a^2b - 5a - 7ab^2 + b$

(11) $6a^4b^2 - 11a^3b^3 + 4a^2b^4$

(12) $t^2(t + 3) + 6t(t + 3) + 9(t + 3)$

Answers:

(AD) $5(x + 4y)(x + 3y)$

(AN) $x^2y(2x + 5)(x - 4)$

(OL) $(3n - 6)(n + 4)$

(UI) $xy(2x - 7y)(2x + 7y)$

(TH) $3xy(3x + 5y)(x + 2y)$

(EF) $5(x + 6y)(x - 2y)$

(ET) $(x^2 + 2)(3x + 2y)$

(SR) $(3n - 8)(n - 3)$

(FO) $xy(9x + 5y)(x - 7y)$

(LL) $(x^2 + 4)(3x - y)$

(NT) $x^2y(2x + 1)(x + 10)$

Answers:

(IS) $2ab(a^2b^2 + 12)(a^4b^2 + 12)$

(OT) $(t + 3)^2(t - 1)^2$

(TE) $8ab^3(2a^2b + 5ab^2 + 1)$

(AT) $2ab(a^3b + 12)(a^3b - 12)$

(EY) $(t + 3)^3$

(EP) $a^2b^2(2a + b)(3a - 2b)$

(YQ) $(t + 1)(t - 1)(t + 6)(t - 6)$

(UL) $(5a - b)(7ab - 1)$

(LS) $8ab^3(2ab^2 + 5ab^3 + 1)$

(IX) $(5a - 2b)(7ab - 5)$

(EA) $a^2b^2(2a - b)(3a - 4b)$

6	9	1	11	4	8	2	7	5	12	3	10

OBJECTIVE 3–v: To factor polynomials completely (review of all types on preceding pages).