

What Happened When the Boarding House Blew Up?

Factor each trinomial below. Find one of the factors in each column of binomials. Notice the letter next to one factor and the number next to the other. Write the letter in the box at the bottom of the page that contains the matching number.

① $3x^2 + 7x + 2$

② $2x^2 + 5x + 3$

③ $3x^2 - 16x + 5$

④ $7x^2 - 9x + 2$

⑤ $6u^2 + 5u + 1$

⑥ $8u^2 - 9u + 1$

⑦ $10u^2 + 17u + 3$

⑧ $9u^2 - 9u + 2$

⑨ $5u^2 + 11u + 6$

⑤ $(5u + 3)$

③ $(x - 1)$

⑧ $(3x + 1)$

⑭ $(3u - 1)$

⑥ $(2u + 3)$

⑮ $(x + 1)$

⑨ $(5u + 6)$

⑦ $(2u + 1)$

⑪ $(3x - 1)$

⑰ $(u - 1)$

① $(3u - 2)$

② $(x - 5)$

③ $(8u - 1)$

④ $(7x - 2)$

⑤ $(5u + 1)$

⑥ $(x + 2)$

⑦ $(7x + 2)$

⑧ $(2x + 3)$

⑨ $(u + 1)$

⑩ $(3u + 1)$

⑩ $3n^2 + 2n - 1$

⑪ $5n^2 - 4n - 1$

⑫ $2n^2 + 5n - 3$

⑬ $7n^2 - 13n - 2$

⑭ $3t^2 + 14t - 5$

⑮ $4t^2 - 11t + 7$

⑯ $6t^2 + 5t - 1$

⑰ $3t^2 - 20t - 7$

⑫ $(3t - 1)$

⑤ $(n - 1)$

④ $(3t + 1)$

⑩ $(n - 2)$

⑬ $(t + 1)$

② $(3n - 1)$

⑯ $(2n - 1)$

④ $(3t - 7)$

① $(4t - 7)$

① $(n + 3)$

② $(t - 1)$

③ $(2t + 1)$

④ $(n + 1)$

⑤ $(t + 5)$

⑥ $(5n + 1)$

⑦ $(t - 7)$

⑧ $(7n + 1)$

⑨ $(6t - 1)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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NOTE: For each exercise, students must find one factor in each column of binomials. This format was selected to discourage "working backwards" from the answers. Students may need some help getting started. The first answer is indicated in blue:

What Happened When the Boarding House Blew Up?

Factor each trinomial below. Find one of the factors in **each** column of binomials. Notice the letter next to one factor and the number next to the other. Write the letter in the box at the bottom of the page that contains the matching number.

- ① $3x^2 + 7x + 2$ $(3x + 1)(x + 2)$
- ② $2x^2 + 5x + 3$ $(2x + 3)(x + 1)$
- ③ $3x^2 - 16x + 5$ $(3x - 1)(x - 5)$
- ④ $7x^2 - 9x + 2$ $(7x - 2)(x - 1)$
- ⑤ $6u^2 + 5u + 1$ $(2u + 1)(3u + 1)$
- ⑥ $8u^2 - 9u + 1$ $(8u - 1)(u - 1)$
- ⑦ $10u^2 + 17u + 3$ $(2u + 3)(5u + 1)$
- ⑧ $9u^2 - 9u + 2$ $(3u - 2)(3u - 1)$
- ⑨ $5u^2 + 11u + 6$ $(5u + 6)(u + 1)$

- ⑤ $(5u + 3)$
- ③ $(x - 1)$
- ⑧ $(3x + 1)$
- ⑭ $(3u - 1)$
- ⑥ $(2u + 3)$
- ⑮ $(x + 1)$
- ⑨ $(5u + 6)$
- ⑦ $(2u + 1)$
- ⑪ $(3x - 1)$
- ⑰ $(u - 1)$
- ⑶ $(3u - 2)$
- ⑵ $(x - 5)$
- ⑴ $(8u - 1)$
- ⑴ $(7x - 2)$
- ⑴ $(5u + 1)$
- ⑴ $(x + 2)$
- ⑴ $(7x + 2)$
- ⑴ $(2x + 3)$
- ⑴ $(u + 1)$
- ⑴ $(3u + 1)$

- ⑩ $3n^2 + 2n - 1$ $(3n - 1)(n + 1)$
- ⑪ $5n^2 - 4n - 1$ $(5n + 1)(n - 1)$
- ⑫ $2n^2 + 5n - 3$ $(2n - 1)(n + 3)$
- ⑬ $7n^2 - 13n - 2$ $(7n + 1)(n - 2)$
- ⑭ $3t^2 + 14t - 5$ $(3t - 1)(t + 5)$
- ⑮ $4t^2 - 11t + 7$ $(4t - 7)(t - 1)$
- ⑯ $6t^2 + 5t - 1$ $(6t - 1)(t + 1)$
- ⑰ $3t^2 - 20t - 7$ $(3t + 1)(t - 7)$

- ⑫ $(3t - 1)$
- ⑤ $(n - 1)$
- ④ $(3t + 1)$
- ⑩ $(n - 2)$
- ⑬ $(t + 1)$
- ② $(3n - 1)$
- ⑯ $(2n - 1)$
- ④ $(3t - 7)$
- ① $(4t - 7)$
- ⑴ $(n + 3)$
- ⑴ $(t - 1)$
- ⑴ $(2t + 1)$
- ⑴ $(n + 1)$
- ⑴ $(t + 5)$
- ⑴ $(5n + 1)$
- ⑴ $(t - 7)$
- ⑴ $(7n + 1)$
- ⑴ $(6t - 1)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
R	O	O	M	E	R	S	W	E	R	E	F	L	Y	I	N	G

Roomers (rumors) were flying.

OBJECTIVE 3-o: To factor trinomials of the form $ax^2 + bx + c$, where a is a positive integer greater than 1.

① $6x^2 - 19x + 3$

② $5x^2 - 9x - 2$

③ $9x^2 + 15x + 4$

$$\textcircled{4} \quad 7x^2 + x - 8$$

⑤ $2x^2 - 21x + 40$

⑥ $15m^2 + 19m + 6$

⑦ $8m^2 - 5m - 3$

⑧ $4m^2 - 17m + 18$

⑨ $14m^2 + 17m - 22$

⑩ $3m^2 - m - 30$



BI	TH	TE	CH	OP	AR	AN	EC	HS
$(4m - 9)$	$(3x + 1)$	$(m - 2)$	$(m - 3)$	$(2x - 5)$	$(3m - 10)$	$(14m - 11)$	$(2m - 3)$	$(5x + 1)$
SU	KI	LL	SS	NG	NE	SU	CK	AC
$(6x + 1)$	$(15m + 1)$	$(x + 3)$	$(m + 2)$	$(x + 4)$	$(5m + 3)$	$(x - 2)$	$(3m + 2)$	$(9x + 2)$
AB	EN	OU	GH	PI	NT	LO	VE	OD
$(7x + 8)$	$(3x + 4)$	$(7x + 2)$	$(8m + 3)$	$(m + 3)$	$(7m + 2)$	$(x - 8)$	$(m - 1)$	$(x - 1)$

NOTE: You might emphasize to students that they should cross out TWO boxes for each exercise.

What Do You Call Drawing Squares on

Dracula?



Factor each trinomial below. Find both factors in the rectangle below and cross out each box containing a factor. You will cross out two boxes for each exercise. When you finish, print the letters from the remaining boxes in the squares at the bottom of the page.

① $6x^2 + 19x + 3$ $(6x + 1)(x + 3)$

② $5x^2 - 9x - 2$ $(5x + 1)(x - 2)$

③ $9x^2 + 15x + 4$ $(3x + 1)(3x + 4)$

④ $7x^2 + x - 8$ $(7x + 8)(x - 1)$

⑤ $2x^2 - 21x + 40$ $(2x - 5)(x - 8)$

⑥ $15m^2 + 19m + 6$ $(5m + 3)(3m + 2)$

⑦ $8m^2 - 5m - 3$ $(8m + 3)(m - 1)$

⑧ $4m^2 - 17m + 18$ $(4m - 9)(m - 2)$

⑨ $14m^2 + 17m - 22$ $(14m - 11)(m + 2)$

⑩ $3m^2 - m - 30$ $(3m - 10)(m + 3)$

BI (4m - 9)	TH (3x + 1)	TE (m - 2)	CH (m - 3)	OP (2x - 5)	AR (3m - 10)	AN (14m - 11)	EC (2m - 3)	HS (5x + 1)
SU (6x + 1)	KI (15m + 1)	LL (x + 3)	SS (m + 2)	NG (x + 4)	NE (5m + 3)	SU (x - 2)	CK (3m + 2)	AC (9x + 2)
AB (7x + 8)	EN (3x + 4)	OU (7x + 2)	GH (8m + 3)	PI (m + 3)	NT (7m + 2)	LO (x - 8)	VE (m - 1)	OD (x - 1)
C H E C K I N G A C C O U N T								

Checking a count (account).

How Can Fishermen Save Gas ?

Factor each trinomial below. Find one of the factors in **each** column of binomials. Notice the letter next to one factor and the number next to the other. Write the letter in the box at the bottom of the page that contains the matching number.

① $4n^2 - 49$

② $n^2 + 8n + 12$

③ $n^2 - 9n + 20$

④ $n^2 + 16n + 64$

⑤ $n^2 + 2n - 15$

⑥ $3n^2 - 8n + 5$

③ $(n + 1)$

⑪ $(n + 2)$

② $(n + 8)$

⑨ $(2n + 7)$

④ $(n + 5)$

⑱ $(n - 1)$

⑭ $(n - 4)$

① $(n - 3)$

⑧ $(2n - 7)$

② $(n - 5)$

⑤ $(3n - 5)$

④ $(n + 8)$

① $(3n - 1)$

① $(n + 6)$

⑦ $a^2 + 4a - 21$

⑧ $5a^2 + 9a - 2$

⑨ $2a^2 + 11a + 15$

⑩ $1 - 9a^4$

⑪ $a^2 - 11a + 30$

⑫ $10a^2 - 3a - 1$

① $(a - 5)$

⑬ $(a + 7)$

⑤ $(5a + 1)$

⑦ $(a + 2)$

⑮ $(a - 1)$

⑧ $(1 - 3a^2)$

⑯ $(2a + 5)$

⑧ $(2a + 1)$

② $(a - 6)$

② $(a - 3)$

① $(a + 3)$

① $(5a - 1)$

② $(2a - 1)$

① $(1 + 3a^2)$

⑬ $8u^2 + 19u + 6$

⑭ $25u^2 - 20u + 4$

⑮ $3u^2 - 11u - 14$

⑯ $u^2 - 4u - 21$

⑰ $6u^2 + 17u - 10$

⑱ $2u^2 + 5u - 18$

⑩ $(u + 3)$

⑫ $(2u + 9)$

⑰ $(u - 3)$

③ $(5u - 2)$

⑥ $(3u - 14)$

⑮ $(u + 2)$

⑰ $(3u + 10)$

① $(u + 1)$

② $(2u + 1)$

① $(8u + 3)$

② $(2u - 1)$

① $(u - 7)$

② $(u - 2)$

① $(5u - 2)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
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NOTE: This puzzle is similar to the one on page 39. Students must find one factor in each column of binomials. The first answer is indicated in blue.

How Can Fishermen Save Gas?

Factor each trinomial below. Find one of the factors in **each** column of binomials. Notice the letter next to one factor and the number next to the other. Write the letter in the box at the bottom of the page that contains the matching number.

- ① $4n^2 - 49$ $(2n + 7)(2n - 7)$
 ② $n^2 + 8n + 12$ $(n + 6)(n + 2)$
 ③ $n^2 - 9n + 20$ $(n - 4)(n - 5)$
 ④ $n^2 + 16n + 64$ $(n + 8)(n + 8)$
 ⑤ $n^2 + 2n - 15$ $(n + 5)(n - 3)$
 ⑥ $3n^2 - 8n + 5$ $(3n - 5)(n - 1)$

- ③ $(n + 1)$ ① $(n - 3)$
 ⑪ $(n + 2)$ ⑧ $(2n - 7)$
 ② $(n + 8)$ ① $(n - 5)$
 ⑨ $(2n + 7)$ ③ $(3n - 5)$
 ④ $(n + 5)$ ④ $(n + 8)$
 ⑱ $(n - 1)$ ① $(3n - 1)$
 ⑭ $(n - 4)$ ① $(n + 6)$

- ⑦ $a^2 + 4a - 21$ $(a + 7)(a - 3)$
 ⑧ $5a^2 + 9a - 2$ $(5a - 1)(a + 2)$
 ⑨ $2a^2 + 11a + 15$ $(2a + 5)(a + 3)$
 ⑩ $1 - 9a^4$ $(1 - 3a^2)(1 + 3a^2)$
 ⑪ $a^2 - 11a + 30$ $(a - 5)(a - 6)$
 ⑫ $10a^2 - 3a - 1$ $(5a + 1)(2a - 1)$

- ① $(a - 5)$ ① $(2a + 1)$
 ⑬ $(a + 7)$ ① $(a - 6)$
 ⑤ $(5a + 1)$ ① $(a - 3)$
 ⑦ $(a + 2)$ ① $(a + 3)$
 ⑮ $(a - 1)$ ① $(5a - 1)$
 ⑧ $(1 - 3a^2)$ ① $(2a - 1)$
 ⑯ $(2a + 5)$ ① $(1 + 3a^2)$

- ⑬ $8u^2 + 19u + 6$ $(8u + 3)(u + 2)$
 ⑭ $25u^2 - 20u + 4$ $(5u - 2)(5u - 2)$
 ⑮ $3u^2 - 11u - 14$ $(3u - 14)(u + 1)$
 ⑯ $u^2 - 4u - 21$ $(u + 3)(u - 7)$
 ⑰ $6u^2 + 17u - 10$ $(3u + 10)(2u - 1)$
 ⑱ $2u^2 + 5u - 18$ $(2u + 9)(u - 2)$

- ⑩ $(u + 3)$ ① $(u + 1)$
 ⑫ $(2u + 9)$ ① $(2u + 1)$
 ⑰ $(u - 3)$ ① $(8u + 3)$
 ③ $(5u - 2)$ ① $(2u - 1)$
 ⑥ $(3u - 14)$ ① $(u - 7)$
 ⑮ $(u + 2)$ ① $(u - 2)$
 ⑰ $(3u + 10)$ ① $(5u - 2)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	Y	F	O	R	M	I	N	G	C	A	R	P	P	O	O	L	S

By forming carp pools (car pools).

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:

- ① $5x(x + 3)(x - 4)$
- ② $2x(2x + 3)(2x - 3)$
- ③ $2x(x + 6)(x - 4)$
- ④ $3(x - 2)(x - 3)$
- ⑤ $4(x + 5)(x - 3)$
- ⑥ $x(x + 5)(x + 3)$
- ⑦ $4(x + 5)(x - 1)$
- ⑧ $x(x + 10)(x + 1)$
- ⑨ $2x(x - 12)(x + 2)$
- ⑩ $5x(x - 2)(x - 6)$
- ⑪ $2x(4x + 9)(x + 1)$

- 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:

- ⑦ $3m(5m + 3)(m + 1)$
- ⑧ $5(3m + 1)(m - 5)$
- ⑨ $(3m - 4)(m - 2)$
- ⑩ $2(2m + 1)(m + 7)$
- ⑪ $5(3m - 5)(m + 1)$
- ⑫ $6m(5m - 1)(2m - 1)$
- ⑬ $3m(5m + 2)(m - 1)$
- ⑭ $2(2m - 7)(m - 1)$
- ⑮ $2m(5m + 1)(5m - 1)$
- ⑯ $6m(10m - 1)(m + 1)$
- ⑰ $(3m - 2)(m + 4)$

5	8	11	7	1	3	9	6	2	12	4	10
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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) $3x^2 - 15x + 18$ O
 (2) $x^3 + 11x^2 + 10x$ E
 (3) $8x^3 - 18x$ N
 (4) $5x^3 - 40x^2 + 60x$ O
 (5) $4x^2 + 8x - 60$ C
 (6) $2x^3 - 20x^2 - 48x$ H

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) $4m^2 - 18m + 14$ N
 (8) $15m^3 + 24m^2 + 9m$ O
 (9) $15m^2 - 10m - 25$ T
 (10) $50m^3 - 2m$ P
 (11) $3m^2 - 10m + 8$ R
 (12) $60m^3 + 54m^2 - 6m$ C

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
C	O	R	N	O	N	T	H	E	C	O	P

Corn on the cop (cob).