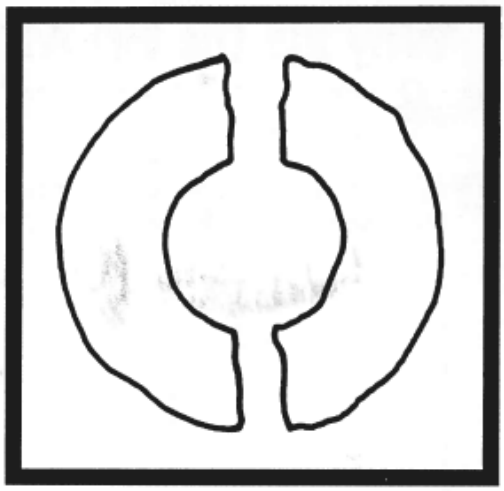
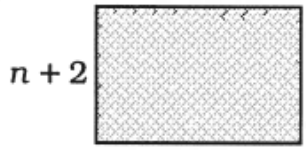
# Law of the Donut

## What Famous Rule of Donuts Is Illustrated by This Picture?



For the first exercise in each set, find the area of the rectangle. For all other exercises, multiply using the distributive property. Write the letter of the exercise in the box that contains the number of the answer.

**S**




**A** $(n+4)(n+9)$

**E** $(n-3)(n+10)$

**W** $(n-6)(n-5)$

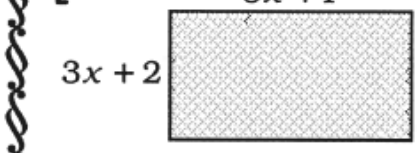
**O** $(2n+2)(3n+8)$

**A** $(7n+5)(4n-1)$

**Answers**

**16** $n^2+7n+36$
**22** $n^2+7n-30$
**7** $28n^2-11n-5$
**10** $n^2+7n+10$
**2** $n^2-11n+30$
**13** $28n^2+13n-5$
**6** $n^2+13n+36$
**14** $n^2+22n+30$
**20** $6n^2+22n+16$

**E**




**A** $(9x-2)(4x-4)$

**L** $(6x+1)(3x-2)$

**E** $(5x-4)(2x+7)$

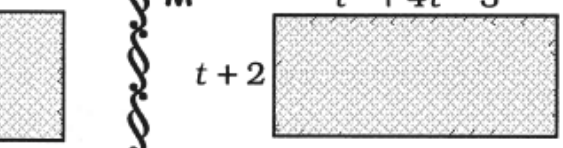
**O** $(2x+5y)(x+6y)$

**H** $(4x-y)(9x-4y)$

**Answers**

**3** $2x^2+17xy+30y^2$
**18** $36x^2-20xy+4y^2$
**7** $18x^2-9x-2$
**19** $36x^2-25xy+4y^2$
**4** $18x^2+27x-2$
**15** $10x^2+27x-28$
**9** $15x^2+13x+2$
**8** $10x^2-44x-28$
**17** $36x^2-44x+8$

**M**




**T** $(2t-3)(3t^2+2t+5)$

**K** $(4t+1)(2t^2-7t+2)$

**H** $(3t-4)(2t^2-t-5)$

**L** $(8t-3)(t^2+2t+9)$

**V** $(5t+2)(4t^2-3t-10)$

**Answers**

**11** $8t^3-26t^2+60t-27$
**21** $8t^3+13t^2+66t-27$
**1** $6t^3-5t^2+4t-15$
**16** $20t^3+13t^2-50t-20$
**12** $t^3+6t^2+5t-6$
**8** $20t^3-7t^2-56t-20$
**4** $6t^3-5t^2+8t+20$
**14** $8t^3-26t^2+t+2$
**5** $6t^3-11t^2-11t+20$

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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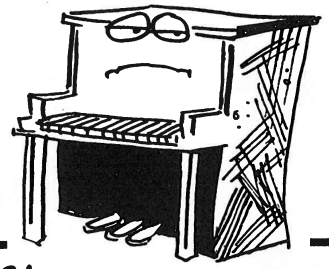
# Why Didn't the Piano Work?



Factor the expression. Find a factor in each of the two answer columns. One factor will have a letter and the other a number. Write the letter in the matching numbered box at the bottom of the page.

**Set 1**

a. $x^2 - 6x$

b. $2x^2 + 8x$

c. $45x^2 - 20x$

d. $9x^3 + 30x$

e. $8x^5 - 15x^3$

**Set 1 Answers**

| | |
|---|---|
| 11. $x^3$ | T. $(3x^2 + 10)$ |
| 6. $2x^2$ | O. $(x - 6)$ |
| 24. $2x$ | V. $(8x^2 + 15x)$ |
| 2. $3x$ | S. $(9x - 4)$ |
| 16. $x$ | F. $(3x^2 - 4)$ |
| 14. $x^2$ | N. $(8x^2 - 15)$ |
| 8. $5x$ | A. $(x + 4)$ |

**Set 3**

a. $m^3n + 9m^2n$

b. $10m^3n^2 - 25m^2n^3$

c. $49m^5n^3 + 28mn^4$

d. $72m^7n + 24n$

e. $8m^3n^4 - 22m^5n^6$

**Set 3 Answers**

| | |
|---|---|
| 10. $5m^2n^2$ | L. $(4 - 11m^2n^2)$ |
| 7. $24n$ | P. $(7m^4 + 4n)$ |
| 18. $7mn^4$ | S. $(2m - 5mn^2)$ |
| 1. $m^2n$ | W. $(3m^7 + 1)$ |
| 12. $2m^3n^4$ | I. $(m + 9)$ |
| 22. $7mn^3$ | L. $(4 - 11mn^3)$ |
| 5. $8mn$ | O. $(2m - 5n)$ |

**Set 2**

a. $8a^3 + 4a^2 + 12a$

b. $7a^4 - 35a^3 - 14a^2$

c. $6a^8 + 10a^6 - 3a^4$

d. $36a^3 - 24a^4 + 60a^5$

e. $30a^6 - 75a^5 - 15a$

**Set 2 Answers**

| | |
|---|---|
| 7. $2a^2$ | Y. $(a^2 - 5a - 2)$ |
| 6. $a^4$ | P. $(2a^5 - 5a^4 - 3)$ |
| 15. $15a$ | T. $(3 - 2a + 5a^2)$ |
| 13. $7a^2$ | K. $(2a^2 + a + 3)$ |
| 9. $3a^2$ | H. $(2a^5 - 5a^4 - 1)$ |
| 4. $4a$ | O. $(6a^4 + 10a^2 - 3)$ |
| 19. $12a^3$ | N. $(3 - 2a - 5a^3)$ |

**Set 4**

a. $40x^2 - 100xy - 80y^2$

b. $12x^5y^2 + 9x^4y^2 - 6x^3y^2$

c. $15x^3y - 35x^2y^2 + 40xy^3$

d. $144x^8y^2 + 27x^4y + 9x^2$

e. $2\pi x^2 - \pi y^2$

**Set 4 Answers**

| | |
|---|---|
| 17. $5xy$ | R. $(4x^2 + 3x - 6y)$ |
| 21. $3x^2y$ | N. $(16x^6y^2 + 3x^2y + 1)$ |
| 5. $9x^2$ | O. $(2x^2 - 5xy - 4y^2)$ |
| 3. $5x^2$ | Y. $(4x^2 + 3x - 2)$ |
| 25. $3x^3y^2$ | L. $(2x^2 - y^2)$ |
| 23. $\pi$ | S. $(3x^2 - 7xy - 4y^2)$ |
| 20. 20 | W. $(3x^2 - 7xy + 8y^2)$ |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
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