

Across

EXPONENTS

- 1. 5^3
- 4. 2^3
- 5. 4^4
- 8. $9^2 - 80$
- 9. $3^2 + 6^3$
- 11. $8^3 + 7^2$
- 12. 1^9
- 13. $12^2 - 65$
- 15. $10^4 + 127$
- 17. $4^5 \div 32$
- 18. $14^2 + 93$
- 20. $2^3 \times 3^4$
- 21. $17^2 - 42$
- 22. $5^4 \times 1^3$
- 24. $221 - 6^3$
- 25. $9^3 + 16$
- 26. $345 - 7^3$
- 27. $40^2 \div 4$
- 29. $11^2 + 8^3$
- 30. $15^2 - 219$
- 31. $20^2 + 10^2$
- 32. $2^5 + 2^3$
- 33. $13^3 - 2049$
- 35. 16^2
- 36. $30^2 + 9^2$
- 38. $50^2 - 45^2$
- 40. $2^4 \times 14$
- 41. $51^2 \times 11$
- 43. $100^2 \div 10^3$

	1	2	3	4	5	6	7	8
1	1	2	5	8	2	5	6	1
8	1	2	2	5	5	6	1	1
13	7	9	1	0	1	2	7	3
18	2	8	9	6	4	8	2	4
23	6	2	5	5	7	4	5	
26	2	4	0	0	6	3	3	6
31	5	0	0	4	1	4	8	
35	2	5	6	9	8	1	4	7
40	6	4	2	8	6	1	1	0
44	4	3	2	4	1	9	1	3
49	3	3	1	2	7	2	9	

- 44. $2^6 \div 4^2$
- 45. 18^2
- 46. $6^3 - 5^2$
- 48. $60^2 + 1200$
- 49. $11^3 - 10^3$
- 50. $1^2 + 1^3$
- 51. 27^2
- 8. 43×2^{22}
- 10. $24^2 - 70$
- 11. $4^2 \times 33$
- 12. $11^2 + 6$
- 14. $31^2 + 5^2$
- 16. $12^2 + 1^2$
- 17. $20^2 - 55$
- 19. $304^2 - 10$
- 21. 3043×2^3
- 23. $10^3 \div 2$
- 25. $9^3 + 2$
- 26. $4^3 \div 2^5$
- 28. $2^6 - 8^2$
- 29. $12^2 \div 24$
- 30. $1^2 + 1^3 + 2^2$
- 31. $23^2 + 5^2$
- 32. $8^3 - 26$
- 34. $29^2 + 30$
- 35. $2^3 \times 33$
- 36. $4^5 - 40$
- 37. $2^7 - 17$
- 39. $10^3 \div 2 + 3$
- 41. $15^2 - 2^2$
- 42. $14^2 + 1^7$
- 45. $1 + 2^5$
- 47. $2^3 + 2^2$
- 49. $9^2 \div 3^3$
- 50. $2^5 \div 4^2$
- 52. 3^2

Down

Hot Air Balloon

Name _____
PERIOD: _____ DATE: _____

For our hot air balloon, each blast of hot air raises the balloon 1 foot. Each sandbag added lowers the balloon 1 foot. After each of the statements below, write down how many feet above or below sea level (0 ft) the balloon will be.

1. You and your balloon are over the Grand Canyon at sea level (0 ft.). You add 17 blasts of hot air. 17 ft (or 17 ft above)

2. Now, with the help of a passing airplane, you add 21 sandbags. -4 ft (or 4 ft below)

3. You decide you don't like this view, so you add 35 blasts of hot air. 31 ft

4. That silly plane flies by again, throwing in 49 sandbags. -18 ft

5. Your basket has become a bit overcrowded, so you throw out 29 sandbags. 11 ft

6. You also notice that your balloon is getting too full, so using your exit vent you take away 22 blasts of hot air.

-11 ft

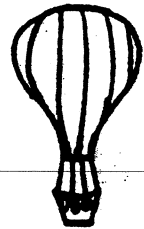
7. Let's get rid of a few more sandbags. Toss out 34 sandbags. 23 ft

8. Oops! A little too high. Take away 18 blasts of hot air. 5 ft.

9. From your last position you now cause the balloon to rise 13 feet. What did you do? add 13 blasts of air

10. Now your balloon drops 23 feet. What did you do? take away 23 blasts of air (or add 23 sandbags)

11. You now take the balloon back to sea level. What did you do? add 5 blasts of air (or take away 5 sandbags)



For problems 12-20, write a mathematical statement to show what's happening and where the balloon ends up. A blast of hot air is the same as positive one (+1) and a sandbag is the same as negative one (-1). For example, if you did this for #1 on the other side, your mathematical statement would be $0 + 17 = 17$. For #2 it would be $17 + -21 = -4$.

12. Again you are starting at sea level. You add 19 sandbags.

$$0 + (-19) = -19$$

13. Now you add 11 blasts of hot air.

$$-19 + 11 = -8$$

14. Now throw out 41 sandbags.

$$-8 - (-41) = 33$$

15. Put 14 sandbags back in.

$$33 + (-14) = 19$$

16. Take away 7 blasts of hot air.

$$19 - 7 = 12$$

17. Take away 27 sandbags.

$$12 - (-27) = 39$$

18. Take away 23 blasts of hot air.

$$39 - 23 = 16$$

19. From here your balloon rises 5 feet. Write down two different mathematical statements that show this.

$$16 + 5 = 21$$

$$16 - (-5) = 21$$

20. Finally, write two different mathematical statements that show how you can return to sea level.

$$21 - 21 = 0$$

$$21 + (-21) = 0$$