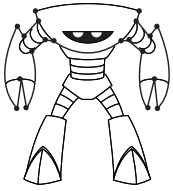


# St. Jude Math-A-Thon Funbook Answer Key

## Level K

### Page 5: Connect-the-Dots



### Page 6: Counting Challenge

- 6
- 5
- 7
- 6
- 24
- 11
- 13
- Symmetry
- Fraction

### Page 7: Droid Dual

- 3
- 8
- 14
- 2
- 6
- 20
- 16
- 4

### Page 8: Comparing Droids

- Less than <
- Equal to =
- Greater than >
- Equal to =
- Greater than >
- Less than <

### Page 9: Adding Numerators

- 5
- 2
- 5
- 4
- 5
- 4

### Page 10: Code Break

- 5
- 6
- 2
- 3
- 7
- 9

## Level 1

### Page 5: Code Crackers

- 17
- 14
- 8
- 16
- 13
- 12
- Secret phrase: MATH

### Page 6: Connection Quest

- 45
- 26
- 62
- 99
- 14
- 53

### Page 7: Trap Trouble

- 2, 6
- 16, 19, 22
- 44, 47, 49
- 75, 77, 79, 81
- 113, 116, 118, 120

### Page 8: Droid Danger

- Greater than >
- Greater than >
- Less than <
- Equal to =
- Less than <

### Page 9: Balloon Escape

- |              |              |
|--------------|--------------|
| A. 2; yellow | I. 3; green  |
| B. 0; red    | J. 1; orange |
| C. 5; purple | K. 5; purple |
| D. 4; blue   | L. 5; purple |
| E. 4; blue   | M. 1; orange |
| F. 3; green  | N. 4; blue   |
| G. 0; red    | O. 2; yellow |
| H. 1; orange |              |

### Page 10: Crate Droid Defeat

Numbers are from top to bottom, left to right.

- 11; 6; 5
- 11; 8; 2
- 7; 5; 4
- Answers will vary. Please confirm that each number in the top two rows is equal to the sum of the two numbers below it.

## Level 2

### Page 5: Shape Secrets

- 
- 
- 
- 
- 
- 

Secret phrase: DROIDS Minus

### Page 6: Superhero Skills

- Fraction
- Symmetry
- Octagon
- Minus
- 5

### Page 7: Counting Challenge

- 20, 60
- 430, 460, 490
- 950, 980, 1000
- 200, 400, 600, 800
- 300, 600, 800, 1000

### Page 8: Even the Odds

- $4 + 4 = 8$ , Even
- $7 + 6 = 13$ , Odd
- $5 + 4 = 9$ , Odd
- $8 + 8 = 16$ , Even
- $10 + 9 = 19$ , Odd

### Page 9: Key Code Quest

3	2	6		2	0	5
9						4
2	7	8		9	3	7
		1		7		
7	2	9		5	6	6
	3				9	
8	1	2		4	0	0

### Page 10: Arrow Adventure

- 125, 127, 132, 151
- 109, 298, 892, 901
- 426, 642, 671, 711
- 567, 657, 756, 765
- 412, 421, 489, 491
- 235, 325, 352, 532
- 616, 629, 698, 701
- 779, 780, 817, 821
- 511, 514, 520, 541
- 151, 491, 532, 541, 701, 711, 765, 821, 901
- Secret phrase: MATH SKILLS

## Level 3

### Page 5: Puzzle Power

3	4	9	8		1	2	6	7
5		3			0			1
0	1	3	5		4	5	6	
8	2	4	1		8	9	4	
			2	5	2		3	2
	4	2	3	7		3	0	5
9	0	3		3		9		9
	9		4		1		0	

### Page 6: Factor Force Field

- $2 \times 6 = 12$ ;  $6 \times 2 = 12$ ;  $12 \div 6 = 2$ ;  $12 \div 2 = 6$
- $3 \times 4 = 12$ ;  $4 \times 3 = 12$ ;  $12 \div 4 = 3$ ;  $12 \div 3 = 4$
- $5 \times 3 = 15$ ;  $3 \times 5 = 15$ ;  $15 \div 3 = 5$ ;  $15 \div 5 = 3$
- $9 \times 2 = 18$ ;  $2 \times 9 = 18$ ;  $18 \div 2 = 9$ ;  $18 \div 9 = 2$
- $6 \times 4 = 24$ ;  $4 \times 6 = 24$ ;  $24 \div 4 = 6$ ;  $24 \div 6 = 4$

### Page 7: Signal Surge

- 5,410
- 18,700
- 49,000
- 390,000
- 891,000
- 3,630
- 34,900
- 900,000

### Page 8: Solve and Seek

- 1,796
- 1,803
- 1,959
- 1,812
- 1,788
- 6,1787
- 1,864
- 1,907
- 1,845
- 1,789
- Secret phrase: IN SPACE

### Page 9: Comparison Challenge

- T
- A
- L
- K
- 5
- H
- M
- I
- S
- Secret phrase: MATH SKILLS

### Page 10: Droid Dual

- 4
- 12
- 6
- 4 (energy blasters), 6 (shield generators), 12 (hoverboards)
- The Numerators can make the fewest energy blasters because the energy blasters require the greatest number of energy cells.
- Answers will vary. The total sum of each device must be 24.

## Level 4

### Page 5: Word Power

- B = 5, A = 2, Z = 8, O = 64, P = 7,  
M = 49, W = 54  
POW;  $7 + 64 + 54 = 125$   
BAM;  $5 + 2 + 49 = 56$   
BOP;  $5 + 64 + 7 = 76$   
ZAP;  $8 + 2 + 7 = 17$

### Page 6: Hide and Seek

- 6,069
- 3,424
- 10,472
- 5,766
- 5,663
- 5,448
- 3,395
- 10,368
- 5,296
- 6,590
- 10,174
- 15,385
- Symmetry caught the most droids

### Page 7: Shield Surge

- Greater than >
- Greater than >
- Less than <
- Equal to =
- Less than <

### Page 8: Counting Droids

- 158,648
- 508,401
- 248,874
- 504,143
- 58,513
- 35,782
- 902,307
- 395,729



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**Page 9: Fraction Fixer**

- 1/2      6. 2/3      11. 2/3
- 2/3      7. 4/5      12. 5/7
- 2/3      8. 3/4      13. 2/3
- 3/4      9. 3/4      14. 2/3
- 3/4      10. 4/5      15. 2/3

**Page 10: Multiply Mission**

- 140      6. 4,661
- 600      7. 7,920
- 608      8. 50
- 5,166      9. 2,142
- 1,702      10. 4,760

Secret phrase: MATH SKILLS

**Level 5**

**Page 5: Interstellar Search**

Accept all valid solutions that use the four digits given and the correct order of operations. Possible answers include:

- $4 + 3 \times 5 + 5 = 24$
- $8 \div 1 \times 3 - 4 = 20$
- $(8 + 6) - 2 \times 5 = 4$
- $3 \times 3 + 6 \times 3 = 27$
- $3 - 6 \times 2 \div 4 = 0$
- $(6 + 2) \times 5 \div 2 = 20$
- $9 \div 3 \times (7 + 3) = 30$
- $(9 - 5) \times (8 \div 2) = 16$

**Page 6: Planetary Pursuit**

- 35,900,000 miles; Mercury
- 886,700,000 miles; Saturn
- 92,960,000 miles; Earth
- 2,794,000,000 miles; Neptune
- 483,600,000 miles; Jupiter
- 67,200,000 miles; Venus
- 1,783,000,000 miles; Uranus
- 141,600,000 miles; Mars

**Page 7: Crack the Code**

- Y. 43      D. 44      P. 24  
 B. 32      A. 14      O. 63  
 I. 51      T. 28      G. 22  
 W. 29      R. 21      S. 38  
 E. 17      L. 42

Secret Phrase: SABOTAGE POWER GRID

**Page 8: Power Grid Crisis**

- 485      6. 1,312      11. 267
- 1,323      7. 8,818      12. 4,310
- 660      8. 11,024      13. 260
- 4,410      9. 540      14. 11,888
- 2,646      10. 3,828      15. 2,046

**Page 9: Puzzle Lockdown**

a	3	2	1	8	9	6
b	4	3	2	7	7	
c	1	2	1	9		4
d	4	1	1	9		3
e	5	5	3		9	4
f	5	6		3	3	2
g	7	3	8		4	0
h						

**Page 10: Mission Decryption**

- M  $426 \div 68 \approx 6$
- L  $24 \div 8 = 3$
- D  $90 \div 9 = 10$
- N  $1,626 \div 14 \approx 120$
- I  $501 \div 8 \approx 60$
- G  $3,000 \div 59 \approx 50$
- H  $192 \div 17 \approx 10$
- T  $1,234 \div 19 \approx 60$

Secret phrase: MIDNIGHT

**Level 6**

**Page 5: Cosmic Calculations**

- 190 pounds
- 212 pounds
- 204 pounds
- 174.64 pounds
- 2,593.5 pounds
- 13.35 pounds
- 95 pounds
- .7345 pounds
- 9.0624 pounds
- 124.215 pounds

**Page 6: High-Speed Chases**

- 1,125 feet      6. 14 seconds
- 1,225 feet      7. 63 seconds
- 3,432 feet      8. 81 feet per second
- 4,992 feet      9. 93.5 feet per second
- 37 seconds      10. 110 Feet per second

**Page 7: Escape Room**

- 43.98      5. 594.64
- 5.67      6. 237.856
- 705.915      7. 143.05
- 470.61      8. 57.22

**Page 8: Deactivate the Droid**

- 2      6. 2 4/7
- 25      7. 20/21
- 1/3      8. 15/17
- 2 1/2      9. 1 11/20
- 5      10. 15/28

Secret Phrase: PLAY DEAD!

**Page 9: Figure Out the Function**

1.	x	y = 4x - 1
	1	3
	2	7
	3	11
	4	15
	5	19
	6	23
	7	27

Rule:  $y = 5x$

2.	x	y
	0	0
	1	5
	2	10
	3	15
	4	20
	5	25
	6	30

Rule:  $y = 3x + 18$  or  $-18 + 3x$

**Page 10: Defeat the Droids**

- 83      7. 27.2
- 44      8. 15
- 50.1      9. 86.9
- 21      10. 51.3
- 90      11. 80.24
- 8      12. 85

Secret Phrase: PUSH THE RED BUTTON!

**Level 7**

**Page 5: Budget Blasters**

- \$3750      6. \$48.91
- \$32.40      7. \$56.55
- \$45.15      8. \$180.00
- \$22.40      9. \$8750
- \$36.58      10. \$235.00

**Page 6: Polar Droids**

- 19° colder      5. 12° colder
- 21° colder      6. 29° colder
- 20° colder      7. 27° warmer
- 23° colder      8. 20 mph

**Page 7: Size Shifters**

- +50%      5. -66.7%
- +75%      6. +25.5%
- 70%      7. +4,122.2%
- 80%      8. +1,555.2%

**Page 8: Droid Defense**

- a. 3/13      4. a. 1/3  
b. 6/13      b. 5/18  
c. 4/13      c. 7/18
- a. 1/6      5. 8 ultra power blasts  
b. 1/2  
c. 1/3
- a. 1/4      b. 2/5  
c. 3/20  
d. 1/5

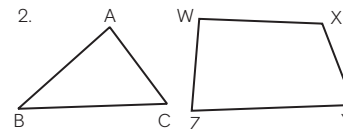
**Page 9: Communication Code**

- 10      6. -3,040
- 24      7. -72
- 3      8. -3
- 48      9. 108
- 117

Secret Phrase: NOBODY!

**Page 10: What is the Angle?**

- $\angle$  BAC       $\angle$  BAD  
 $\angle$  BAE       $\angle$  BAF  
 $\angle$  CAD       $\angle$  CAE  
 $\angle$  CAF       $\angle$  DAE  
 $\angle$  DAF       $\angle$  EAF



**Level 8**

**Page 5: Code Break**

- >, H      10. >, S      19. <, G
- >, M      11. <, T      20. >, U
- <, A      12. >, M      21. <, S
- <, N      13. <, H      22. <, A
- >, R      14. <, O      23. >, R
- >, A      15. >, I      24. >, L
- <, K      16. <, N      25. >, M
- <, T      17. >, T
- <, I      18. <, M

Secret phrase: STRONG MATH SKILLS

**Page 6: Surprise Attack**

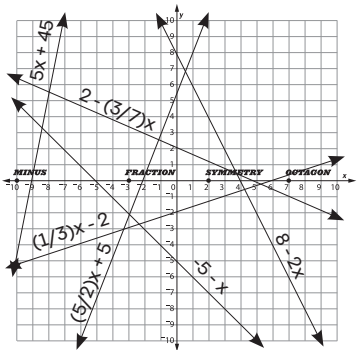
1. Dr. Jax			2. Symmetry		
x	y = 3x	y	x	y = 7x	y
0	3 * 0	0	0	7 * 0	0
1	3 * 1	3	2	7 * 2	14
2	3 * 2	6	5	7 * 5	35
3	3 * 3	9	8	7 * 8	56
4	3 * 4	12	10	7 * 10	70

3. Friction			4. Minus		
x	y = -2x	y	x	y = (1/3)x	y
2	-2 * 2	-4	3	(1/3) * 3	1
3	-2 * 3	-6	9	(1/3) * 9	3
5	-2 * 5	-10	15	(1/3) * 15	5
9	-2 * 9	-18	21	(1/3) * 21	7
11	-2 * 11	-22	28	(1/3) * 28	9 1/3

5. Octagon			6. Droid		
x	y = (-2/5)x	y	x	y = (7/4)x	y
10	(-2/5) * 10	-4	8	(7/4) * 8	14
15	(-2/5) * 15	-6	16	(7/4) * 16	28
25	(-2/5) * 25	-10	20	(7/4) * 20	35
29	(-2/5) * 29	-11 3/5	22	(7/4) * 22	38 1/2
32	(-2/5) * 32	-12 4/5	25 6/7	(7/4) * 25 6/7	45 1/4

- Dr. Jax and Symmetry
- The Droid

**Page 7: Graphing Guardians**



- Symmetry
- Fraction
- Fraction
- Octagon
- Minus
- Octagon

**Page 8: Climb Time**

- 10 ft
- 13 ft
- 16.5 ft
- 35 ft
- 34.86 ft
- 7 ft

**Page 9: Triangular Tactics**

- $x = 36^\circ$       6.  $x = 60^\circ$
- $x = 57^\circ$       7.  $x = 44^\circ$
- $x = 42^\circ$        $(2x = 88^\circ)$
- $x = 39^\circ$       8.  $x = 73.5^\circ$
- $x = 49^\circ$        $(x - 24 = 49.5^\circ)$

**Page 10: Equation Express**

- $y = 2$
- H line
- A line
- D line
- I line
- H line
- E line
- 3 lines: D line, G line, and H line