

LEVEL 7

FUNBOOK

There's **Power** In Numbers

stjude.org/math

St. Jude patient
Colton



St. Jude Math-A-Thon

Welcome to The St. Jude Math-A-Thon®!

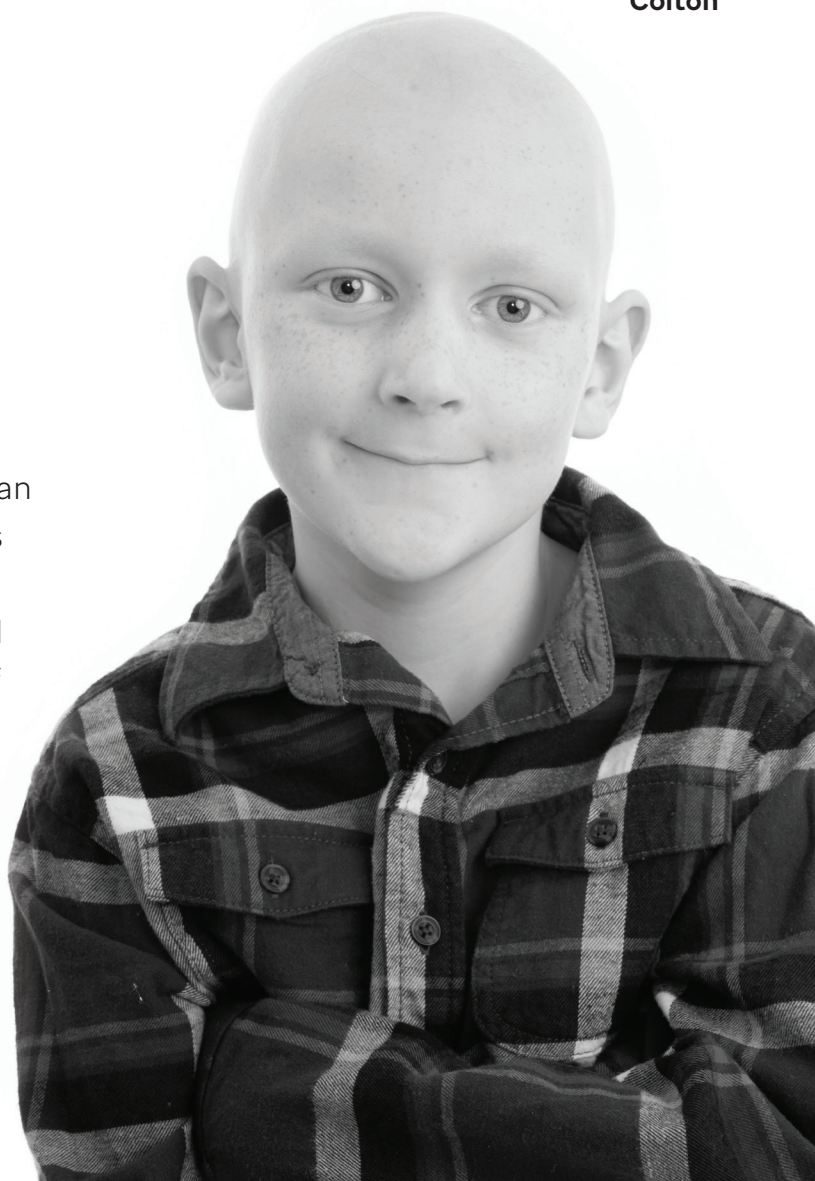
Thank you for supporting St. Jude Children's Research Hospital®. Because of fundraising programs like St. Jude Math-A-Thon and supporters like you, St. Jude is leading the way the world understands, treats and defeats childhood cancer and other life-threatening diseases. You're an important part of making this fundraiser a success, and participation is easy:

- 1** Raise money online using the tools available at **stjude.org/math**
- 2** Complete the math worksheets in this workbook
- 3** Earn cool prizes!

St. Jude patient
Colton

Meet Colton

Sociable, outgoing Colton came to St. Jude Children's Research Hospital® because he had an aggressive form of kidney cancer called Wilms tumor with displaced anaplasia. His treatment included chemotherapy, radiation therapy and surgery to remove his left kidney. Despite all of this, Colton loves St. Jude and its kid-friendly atmosphere. "I've never seen anything like it," he said. "It's awesome." Colton has now completed treatment and back at home enjoying life.



How Math Helps St. Jude

Math is used every day on the St. Jude campus. From careful measurements for patient medicine to the complex mathematics needed in our state-of-the-art research facilities, numbers play an important role in helping our patients. As you complete each worksheet, know that you're sharpening important skills that are used every day to help the kids of St. Jude.



- Since opening, St. Jude has helped push the overall cancer survival rate from 20% to more than 80%. Using your math skills, you notice that means St. Jude is 20% away from totally beating cancer. We won't stop until no child dies from cancer!
- More than 75% of our operating costs come from generous donors. That means more than half of our needs are met thanks to people like you and your family—thank you!
- Most of our patients are treated as outpatients and stay in one of our three housing facilities. We use math to keep track of our nearly 300 rooms specifically designed and managed by us for families of children with cancer and other diseases.

Ready to Sign Up?

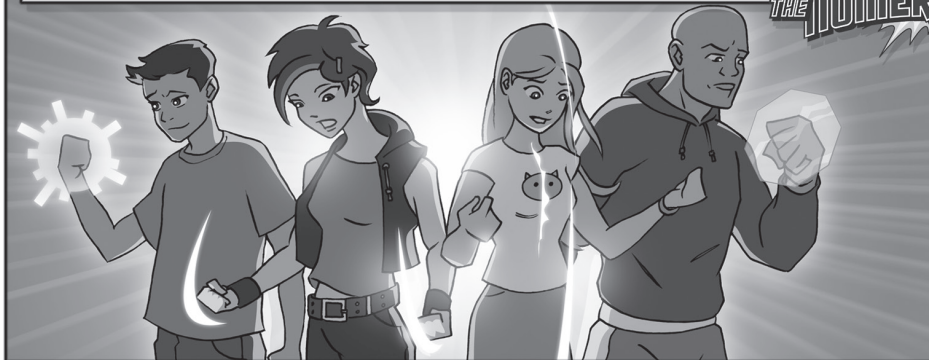
St. Jude relies on the power in numbers. Math plays a vital role in nearly every aspect of our campus, but the strength in numbers is never more powerful than when it helps our patients. That's where you come in—turn to the back page of your funbook to start the sign up process. You can even have your parents scan the QR code and sign up online.

St. Jude patient
Rosario

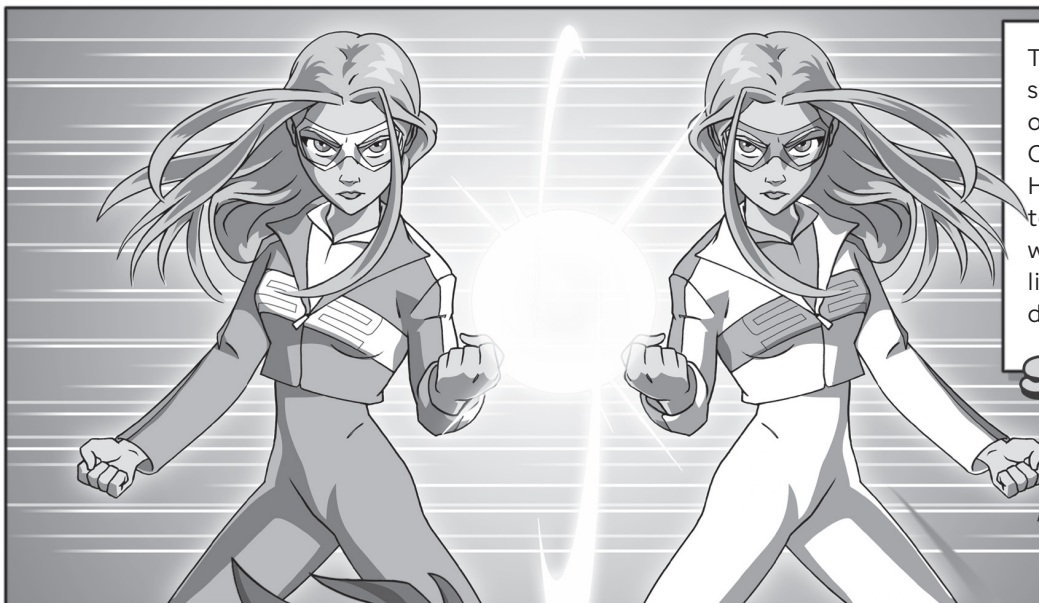
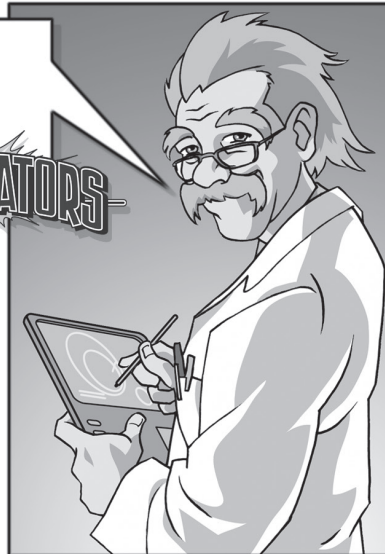


MEET **THE NUMERATORS**

My name is Dr. Jax. Not long ago, four ordinary students discovered they had extraordinary mathematical abilities. Under my guidance, they learned to harness their skills into incredible powers—powers that can be used to help those less fortunate than themselves. Armed with super powers, these once ordinary students became...



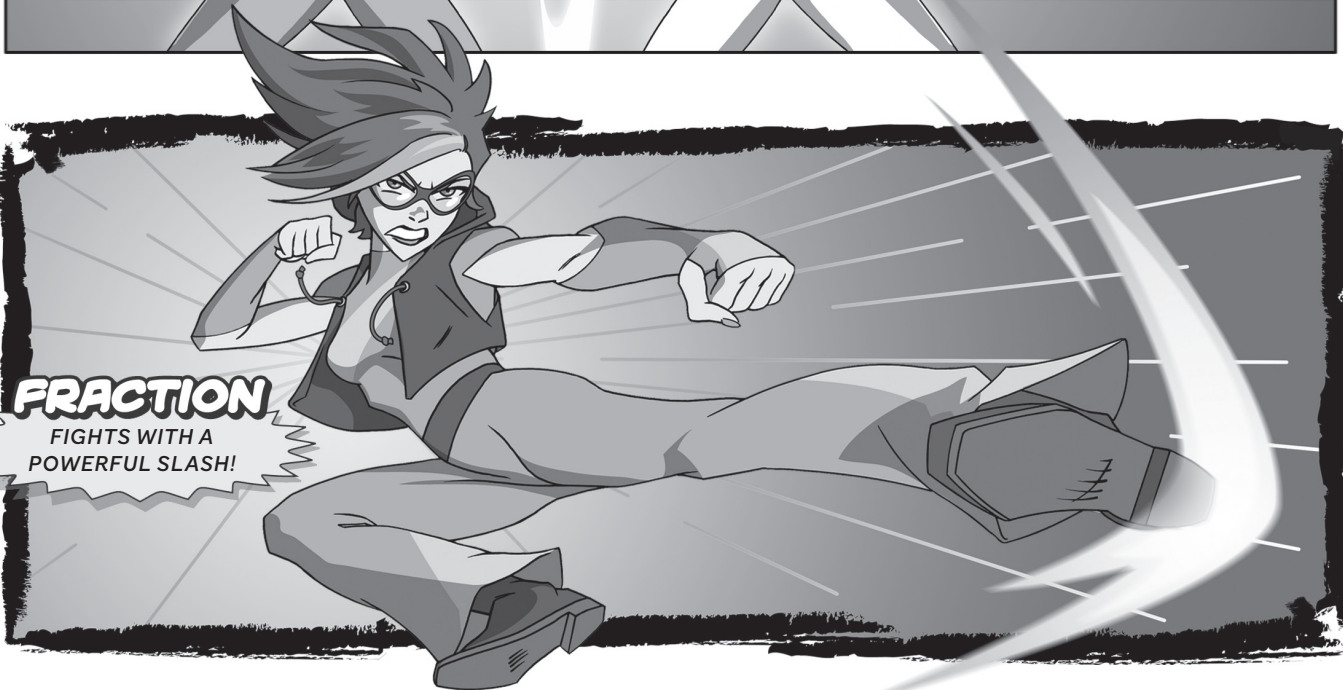
THE NUMERATORS



They used their math skills for the good of others, helping St. Jude Children's Research Hospital® raise money to find cures for children with cancer and other life-threatening diseases.

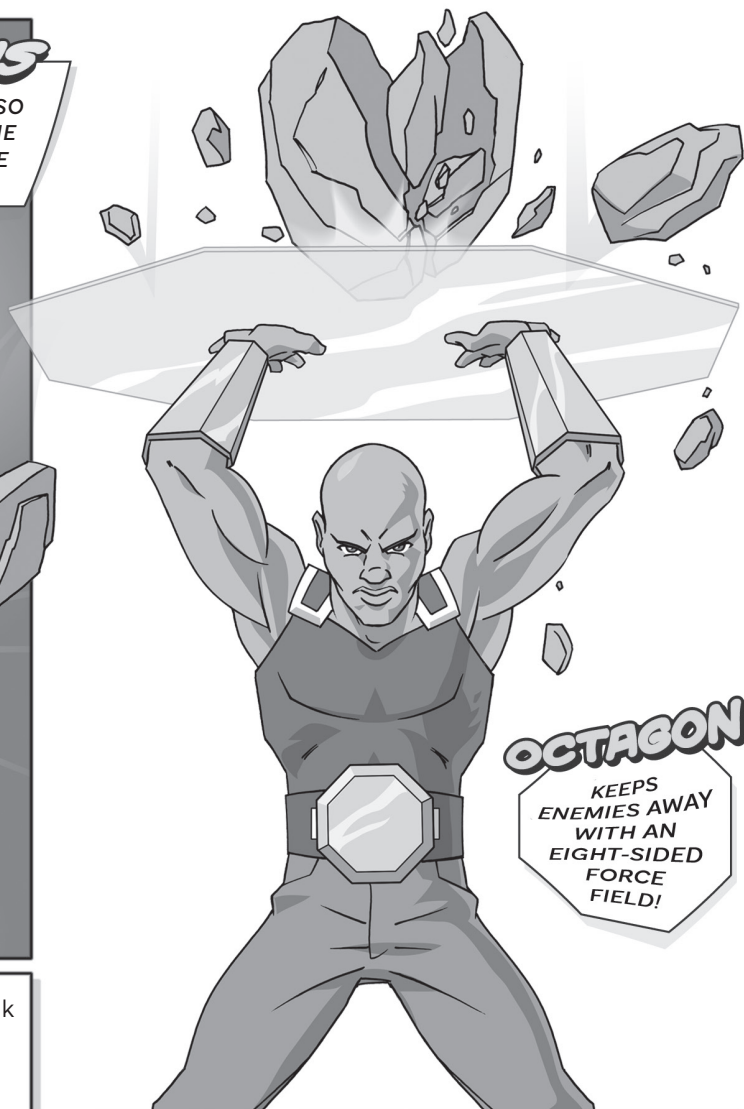
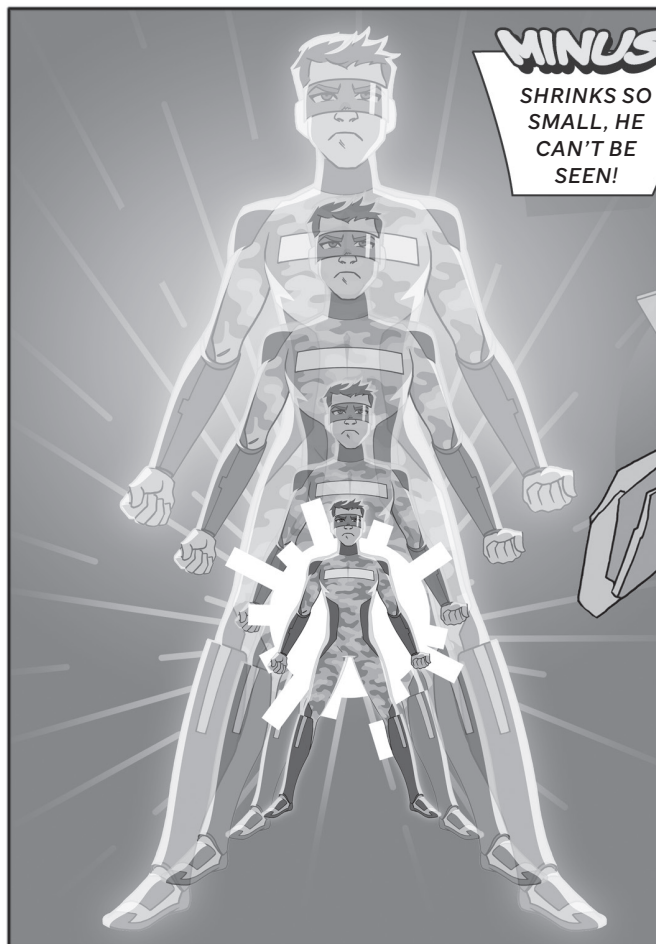
SYMMETRY

SPLITS INTO
EQUAL PARTS FOR
A DOUBLE ATTACK!

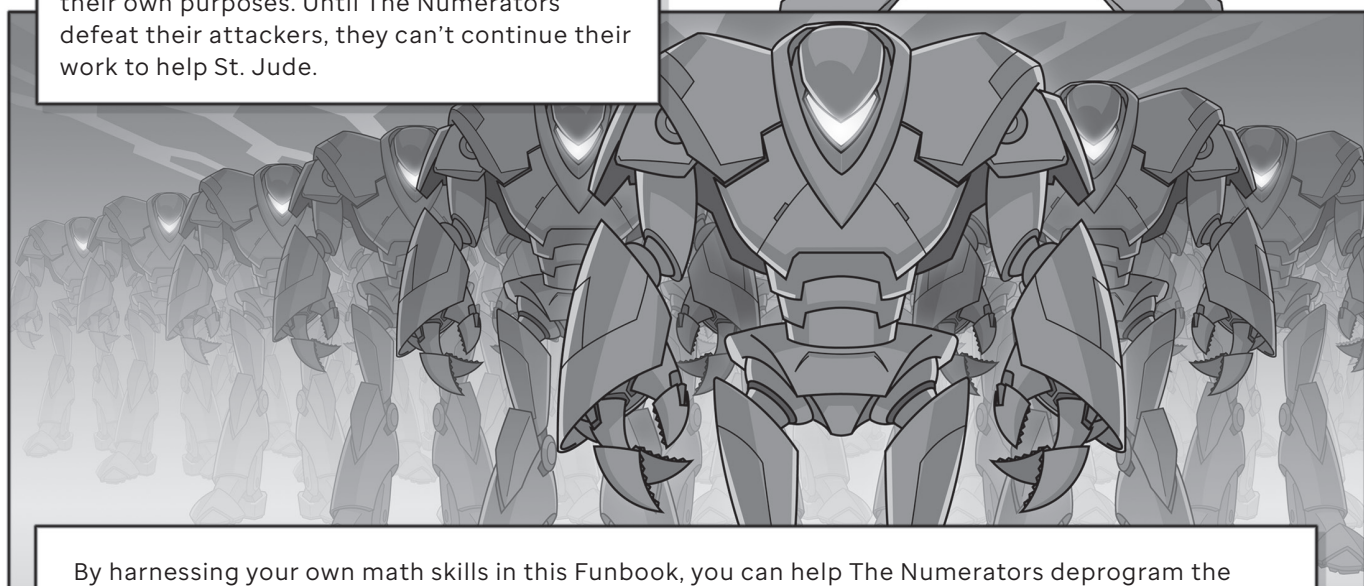


FRACTION

FIGHTS WITH A
POWERFUL SLASH!



But, nothing prepared them for a surprise attack by armored droids sent from the future. These robots want to use The Numerators' powers for their own purposes. Until The Numerators defeat their attackers, they can't continue their work to help St. Jude.



By harnessing your own math skills in this Funbook, you can help The Numerators deprogram the robots. By participating in the St. Jude Math-A-Thon, you'll raise money to help kids at St. Jude. Just like The Numerators, you can use math to help fund research and find cures for kids. Help The Numerators while helping St. Jude, and begin your own adventure today!

Beware the Dis-Count!

If you shop at the Dis-Count's Discount Cape Emporium, prepare to have extra money taken from you—unless you can calculate the discounted prices or the sales tax. Help The Numerators keep the Dis-Count from biting into his customers' wallets! If necessary, round to the nearest cent.

1. A \$50 cape is on sale for 25% off. What is the discounted price?

2. \$36 cape, 10% off.
Discounted price:

3. \$43 cape, 5% sales tax.
Price with tax:

4. \$28 cape, 20% off.
Discounted price:

5. \$35 cape, 4.5% sales tax.
Price with tax:

6. \$73 cape, 33% discount.
Discounted price:

7. \$65 cape, 18% discount, 5% sales tax (calculate the tax based on the original price).
Price with discount and tax:

8. A cape was on sale for 30% off. Its sale price was \$126. What was the original price?

Whew! You saved everyone money!

9. The sales tax on a cape was 6%, and total price with tax was \$92.75. What was the price of the cape?

10. A cape was on sale for 25% off. Its sale price was \$176.25. What was the original price?



Chill Out!

With her incredible ability to make powerful winds, Windy Wendy is turning The Numerators city into a big ball of ice! The windchill chart below shows how cold it feels when the air is different temperatures and the wind is blowing at different speeds.

		Temperature (°F)											
Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55

- The air temperature is 0° until Windy Wendy creates a 15 mph wind. How many degrees colder does it feel?

- The air temperature is 10°. Then, Windy Wendy kicks up a 25 mph wind. How many degrees colder does it feel?

- The air temperature is 5°. Windy Wendy makes a 20 mph wind. How many degrees colder does it feel?

- The sun comes out and warms the air to 20°. Wendy makes a 55 mph wind. How many degrees colder does it feel?

- The air temperature is 15°. How many degrees colder does it feel with a 45 mph wind than with a 10 mph wind?

- The air temperature drops to -5°! Wendy adds a 35 mph wind. How many degrees colder does it feel than the air temperature?

- Windy Wendy creates a 50 mph wind and a windchill temperature of -17°. How many degrees warmer is the air temperature?

- The air temperature is -15°. Windy Wendy makes the air feel 35° colder. What wind speed did Wendy create?

Cool! We caught Windy Wendy. Now if only my t-t-teeth would stop ch-ch-chattering!



100% Minus

Using his special helmet, the Sinister Resizer can change his size just as well as Minus can. Calculate the percent increase or decrease in each size-changing character while they do battle. Remember that percent increase is expressed as a positive percent change, and percent decrease is expressed as a negative percent change. If necessary, round to the nearest tenth of a percent.



1. The Resizer starts out 6 feet tall. But he quickly grows to 9 feet tall. What percent of change is that?

2. Minus strikes back by growing from 66 inches tall to 115.5 inches tall. What percent of change is that?

3. Next, the Resizer changes from 9 feet tall to 2.7 feet tall. What percent of change is that?

4. And Minus then changes from 115.5 inches tall to 23.1 inches tall. What percent of change is that?

5. Resizer changes from 2.7 feet tall to .9 feet tall. Percent of change:

6. Minus changes from 24 inches tall to 29 inches tall. Percent of change:

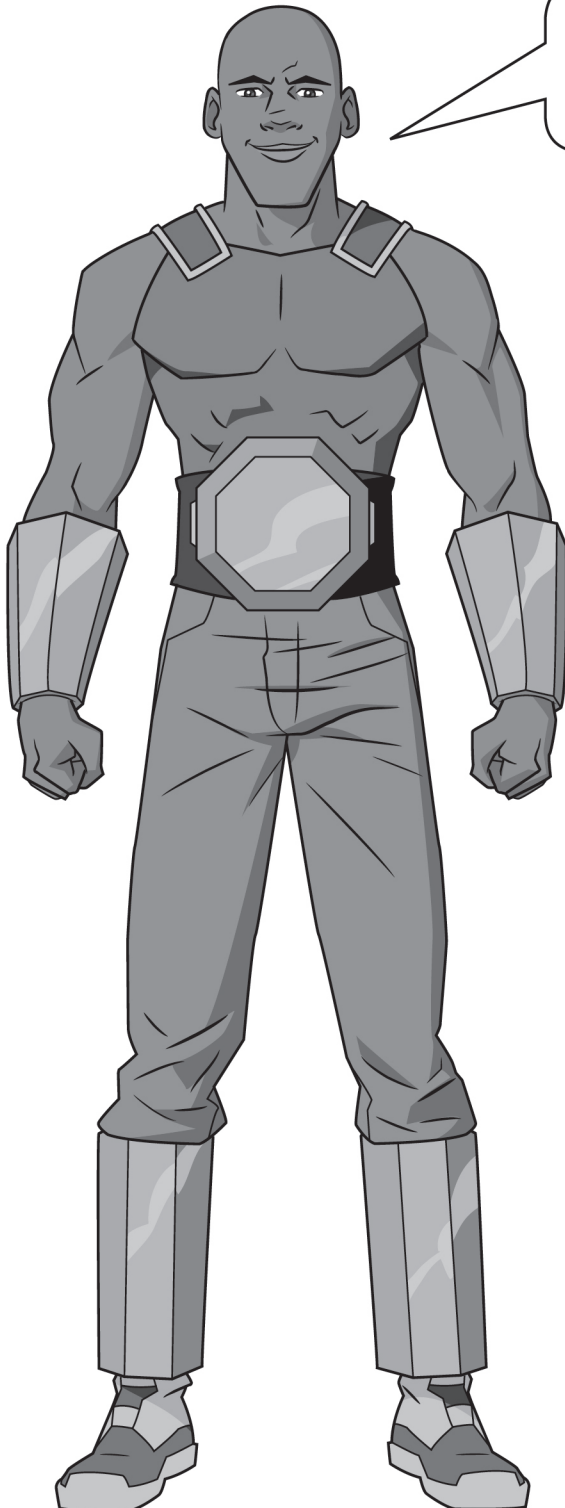
7. The Resizer changes from 1.5 feet tall to 38 feet tall! Percent of change:

8. Finally, Minus changes from 30 inches tall to 40 feet tall and takes away the Sinister Resizer's size-changing helmet. End of story! What percent of change is that?



Mr. Negative

Help The Numerators block Mr. Negative's blasts! Solve for the missing number in his integer equations. Circle the correct answer to the right. Then use the solutions to answer a question about what makes Mr. Negative so negative!



Mr. Negative is turning everyone he zaps into a nasty, evil person like himself!

- | | | | |
|---------------------------------|----------|----------|--------|
| 1. $-2 \times 5 = ?$ | 10 T | 3 A | -10 O |
| 2. $8 \times -3 = ?$ | -24 S | 5 T | 24 W |
| 3. $15 \div -5 = ?$ | -3 O | 3 E | -10 I |
| 4. $-144 \div -8 = ?$ | -18 C | 12 B | 18 N |
| 5. $-9 \times -13 = ?$ | 130 D | 117 N | -130 D |
| 6. $190 \times -16 = ?$ | -3,040 B | -1,040 R | -304 T |
| 7. $-4 \times 6 \times 3 = ?$ | 72 S | -72 Y | -24 E |
| 8. $21 \times -7 \div 49 = ?$ | -147 E | -3 O | 3 A |
| 9. $-96 \div 16 \times -18 = ?$ | -108 N | 108 D | 6 G |

Why won't Mr. Negative ever say the word "Yes"?

 5 3 6 1 9 7 4 8 2

Probability 'Bots

The Random Robots are programmed to randomly pick which attack they'll use. While The Numerators battle the 'bots, figure out the probability of each attack the 'bots can use. Express each answer as a fraction in simplest form.

1. Robotica has 3 heat rays, 6 punch attacks and 4 kick attacks. What is the probability Robotica will use a...

a. heat ray? _____
b. punch attack? _____
c. kick attack? _____

2. Z-Tron has 2 power blasters, 6 hypno rays and 4 punches. What is the probability Z-Tron will use a...

a. power blaster? _____
b. hypno ray? _____
c. punch? _____

3. Blast-Master has 5 heat rays, 8 power blasters, 3 sonic blasters and 4 mind zaps. What is the probability Blast-Master will use a...

a. heat ray? _____
b. power blaster? _____
c. sonic blaster? _____
d. mind zap? _____

4. E-Norm-OS has 12 punches, 10 kicks and 14 head-butts. What is the probability that E-Norm-OS will use a...

a. punch? _____
b. kick? _____
c. head-butt? _____

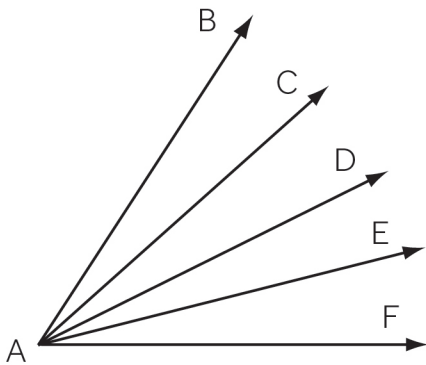
5. Destructimous has 7 sonic blasts and 13 heat rays. It also has a $\frac{2}{7}$ chance of using its ultra power blast. Luckily, Octagon's shield reflected that blast and stopped all the robots. How many ultra power blasts did Destructimous have?



What is the Angle?

Use your protractor to get your degree and write your answers in each blank.

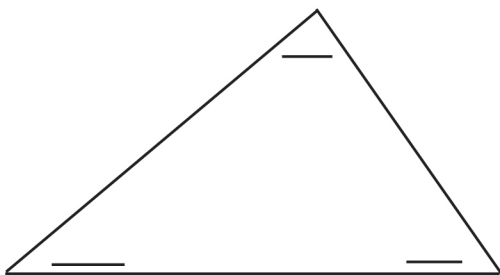
1. There are ten different angles in the figure below. Name them.



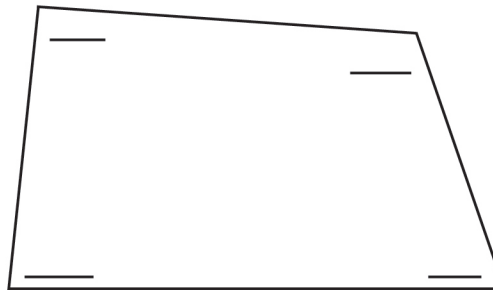
$\angle BAC$

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

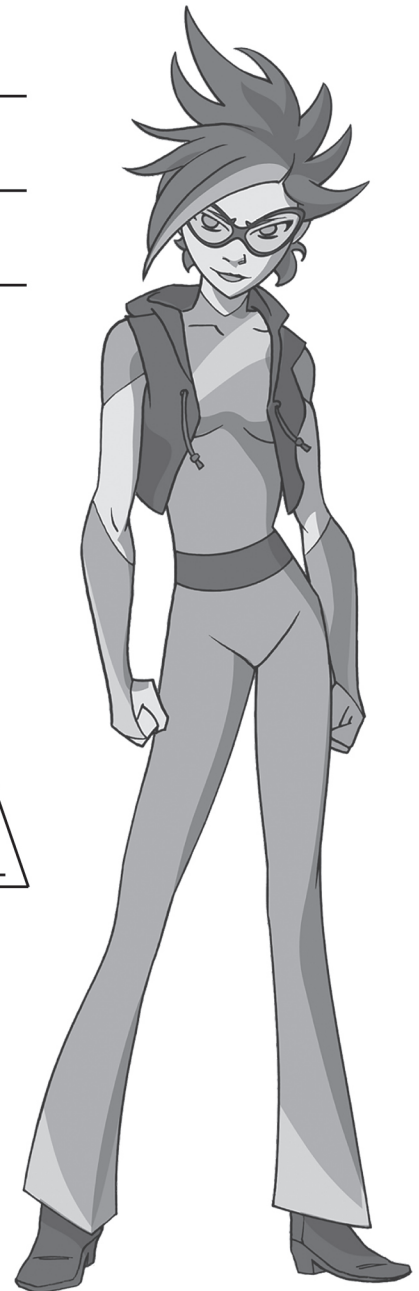
2. Use a protractor. Write the correct letter on each angle of the figures.



$\angle A$: 85°
 $\angle B$: 55°
 $\angle C$: 40°



$\angle W$: 92°
 $\angle X$: 113°
 $\angle Y$: 71°
 $\angle Z$: 84°



LEVEL 7

FUNBOOK

Answer Key

Page 5

Beware the Dis-Count!

1. \$37.50
2. \$32.40
3. \$45.15
4. \$22.40
5. \$36.58
6. \$48.91
7. \$56.55
8. \$180.00
9. \$87.50
10. \$235.00

Page 6

Chill Out!

1. 19° colder
2. 21° colder
3. 20° colder
4. 23° colder
5. 12° colder
6. 29° colder
7. 27° warmer
8. 40 mph

Page 7

100% Minus

1. +50%
2. +75%
3. -70%
4. -80%
5. -66.7%
6. +20.8%
7. +2,433.3%
8. +1,500%

Page 8

Mr. Negative

1. -10
 2. -24
 3. -3
 4. 18
 5. 117
 6. -3,040
 7. -72
 8. -3
 9. 108
- NOBODY NOS!

Page 9

Probability 'Bots

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

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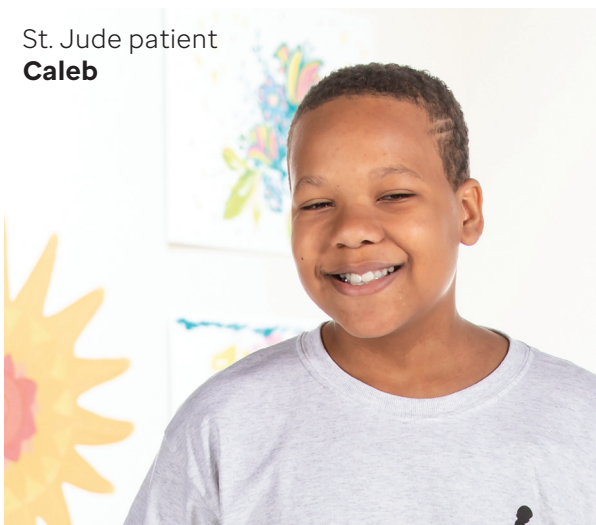
What is the Angle?

1. \angle BAC
 \angle BAE
 \angle CAD
 \angle CAF
 \angle DAF

- \angle
- BAD
-
- \angle
- BAF
-
- \angle
- CAE
-
- \angle
- DAE
-
- \angle
- EAF



St. Jude patient
Caleb



Check out stjude.org/math to start fundraising online today! Packed with tools to help you manage your fundraising efforts, raise more money and save time, stjude.org/math includes tools to help you:

- + Find your school
- + Create your own fundraising webpage and set your goal
- + Accept online donations
- + Integrate with Facebook Fundraising



Scan to find your school and sign up!



St. Jude Children's
Research Hospital

St. Jude
Math-A-Thon

mathathon.org | mathathon@stjude.org | [#stjudemathathon](https://twitter.com/stjudemathathon) | 1-800-386-2665

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