

St. Jude MATH-A-THON



St. Jude patient
Jeriel

LEVEL 7
FUNBOOK

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!

Meet Jeriel

Jeriel's mother rushed him to the hospital after he fell in school in March 2023. Scans showed that he had a tumor in his left femur. After a biopsy, the tumor was found to be osteosarcoma, the most common type of bone cancer in children and teens. Jeriel was later referred to St. Jude, nearly 2,000 miles from where they lived in Puerto Rico.

At St. Jude, Jeriel received treatment, which included chemotherapy followed by limb-sparing surgery. "St. Jude makes this painful journey lighter – more bearable – and I'll be grateful for St. Jude for the rest of my life," said his mother, Maria.

Jeriel returned home in 2024 and is going to physical therapy. His leg is getting stronger every day, and he hopes he will be riding his bike and playing volleyball soon, his mom said. "He looks really great. The physical therapy is helping, and he looks healthy," Maria said.



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.



- The St. Jude campus is always expanding to further our scientific research and create more cures. Math plays an important role in our fundraising efforts.
- Did you know treatment can cost on average \$450,000 for a family to fight childhood cancer? Your Math-A-Thon fundraising efforts transform that big number into zero! Families never receive a bill from St. Jude for treatment, travel, housing or food – so they can focus on helping their child live.
- Scientists at St. Jude research facilities use math to plan their experiments and figure out how many samples they need. They also use math to look at the data they collect, find patterns and understand how well treatments work. This helps them make sure their results are accurate and useful.

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.

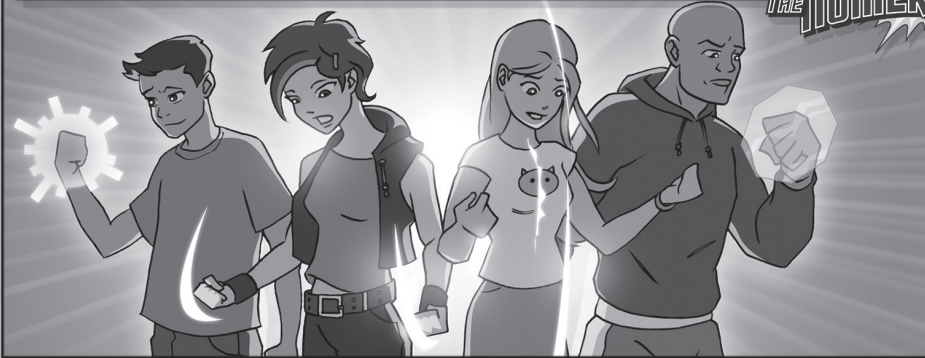


St. Jude patient
Misheel

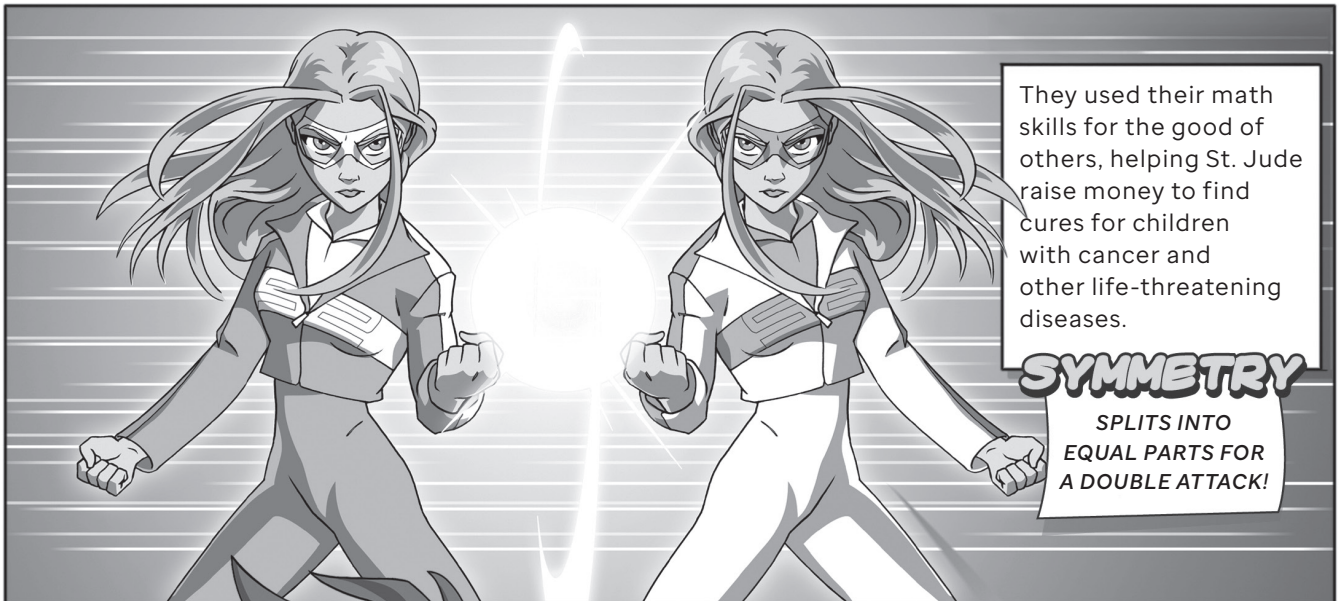
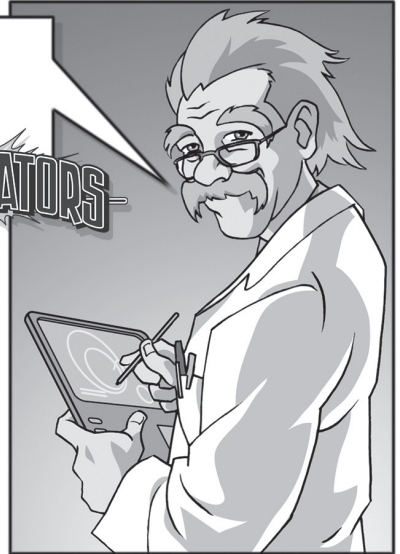
MEET

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 superpowers, these once ordinary students became ...



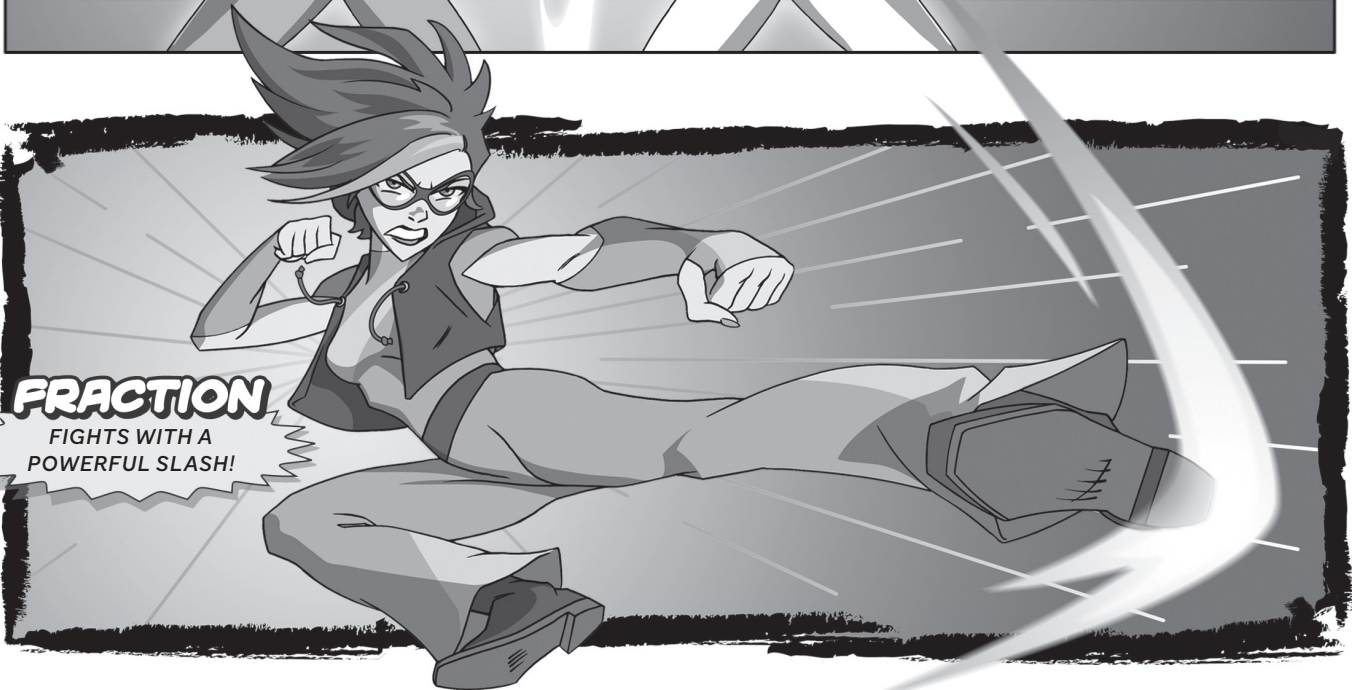
THE NUMERATORS



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

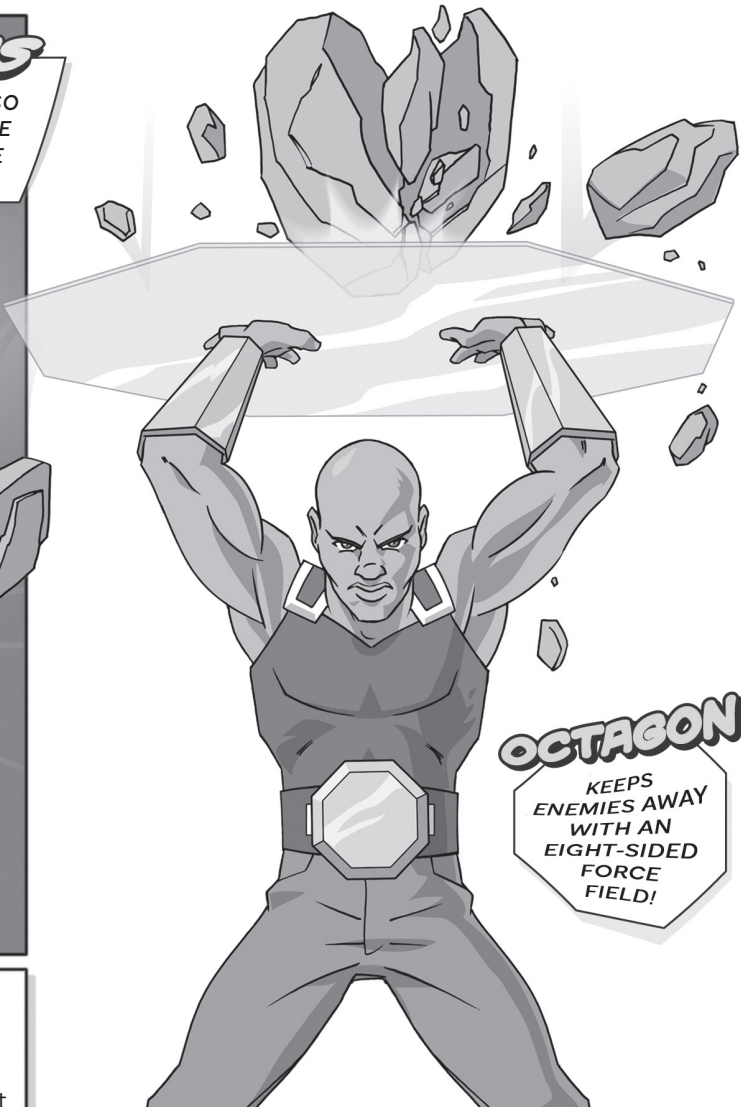
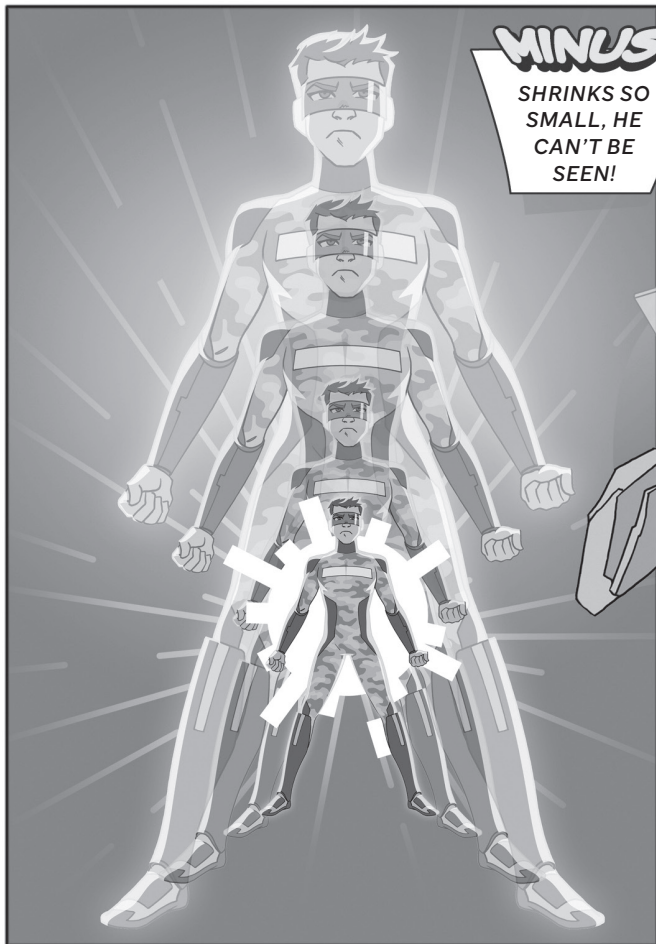
SYMMETRY

SPLITS INTO
EQUAL PARTS FOR
A DOUBLE ATTACK!

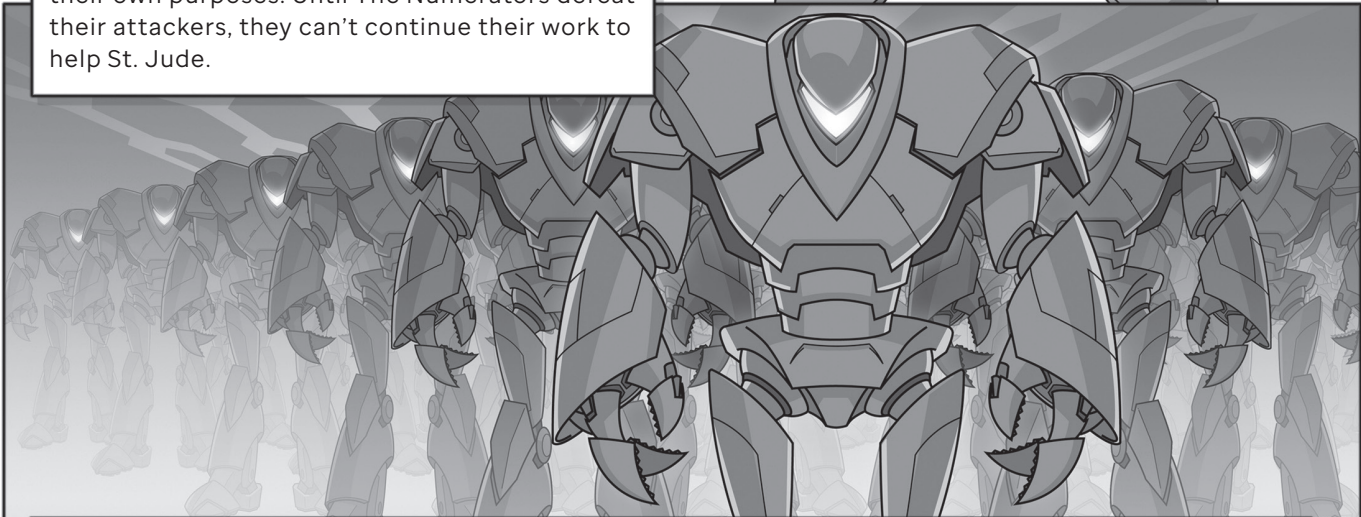


FRACTION

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!

Budget Blasters

Dr. Jax and The Numerators have taken an inventory of what they need to defeat the droids, but they need to purchase each piece of equipment and stay on budget at the same time. Help The Numerators get everything they need by calculating the discounted prices or the sales tax. Remember, you can round to the nearest cent.

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

2. Symmetry's masks total \$36. They are 10% off. What is the discounted price?

3. New boots for Fraction are \$43. There is 5% sales tax. What is the price with tax?

4. A resizing suit for Minus is \$28. There is a 20% discount. What is the discounted price?

5. New crystals for Octogon's force field is \$35. There is 4.5% sales tax. What is the price with tax?

6. Another droid decipher is \$73. There is a 33% discount. What is the price with the discount?

7. A power protector is \$65. There is an 18% discount and 5% sales tax. Calculate the tax based on the original price. What is the price with the discount and tax?

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

Whew! You saved everyone money!

9. The sales tax on the droid deactivator is 6%, and the total price with tax is \$92.75. What is the price of the deactivator?

10. The motion-activated camera is on sale for 25% off. Its sale price is \$176.25. What is the original price?



Polar Droids

The droids are trying to take control by creating powerful winds. The Numerators need your help to return the wind speed back to normal. The windchill chart below shows how cold it feels when the air is at different temperatures and the wind is blowing at different speeds. Use the chart to answer each question and defeat the droids.

		Temperature (°F)											
		Calm	40	35	30	25	20	15	10	5	0	-5	-10
Wind (mph)	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 the droids create a 15 mph wind. How many degrees colder does it feel?

- The air temperature is 10°. Then, the droids kick up a 25 mph wind. How many degrees colder does it feel?

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

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

- 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°! The droids add a 35 mph wind. How many degrees colder does it feel than the air temperature?

- The droids create a 50 mph wind and a windchill temperature of -17°. How many degrees warmer is the air temperature?

- The air temperature is -15°. The droids make the air feel 35° colder. What wind speed did they create?



Size Shifters

The droids have launched another attack. This time they have learned how to modify their size just like Minus. Calculate the percentage increase or decrease in size while they battle back and forth. Remember percentage increase is expressed as a positive percentage change, and percent decrease is expressed as a negative percentage change. If necessary, round to the nearest tenth of a percent. Good luck!



1. The resizer droid 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 droid 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. The resizer droid changes from 2.7 feet tall to .9 feet tall. What percent of change is that?

6. Minus changes from 23.1 inches tall to 29 inches tall. What percent of change is that?

7. The resizer droid changes from .9 feet tall to 38 feet tall. What percent of change is that?

8. Finally, Minus changes from 29 inches tall to 40 feet tall and takes away the resizer droid's size-changing crystal to defeat it! What percent of change is that?



Thanks! You were a *big* help.

Droid Defense

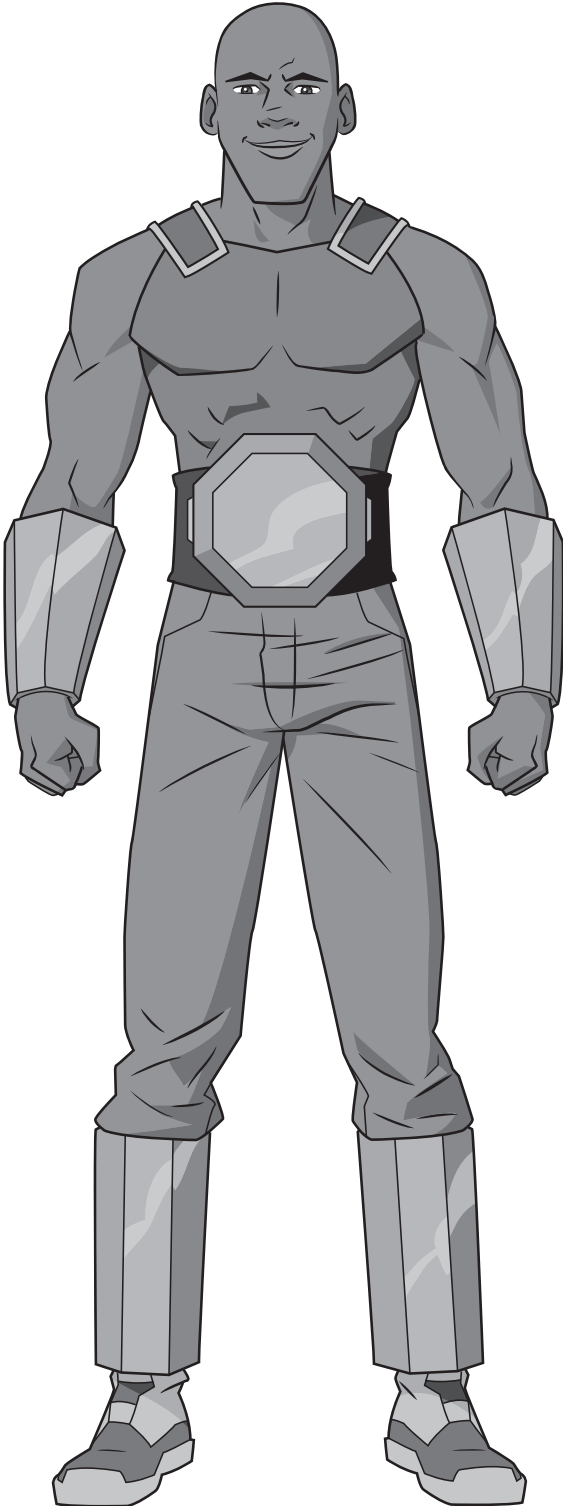
The droids have created five special droids. Octagon needs your help. Use your math skills to figure out the probability of defense each one can use. Express each answer as a fraction in simplest form. Complete each one correctly to defeat all of the droids with Octagon!

- The first droid has 3 heat rays, 6 punch attacks and 4 kick attacks. What is the probability it will use a...
 - heat ray? _____
 - punch attack? _____
 - kick attack? _____
- Another droid has 2 power blasters, 6 hypno rays and 4 punches. What is the probability it will use a...
 - power blaster? _____
 - hypno ray? _____
 - punch? _____
- The next droid has 5 heat rays, 8 power blasters, 3 sonic blasters and 4 mind zaps. What is the probability it will use a...
 - heat ray? _____
 - power blaster? _____
 - sonic blaster? _____
 - mind zap? _____
- The fourth droid has 12 punches, 10 kicks and 14 head-butts. What is the probability that it will use a...
 - punch? _____
 - kick? _____
 - head-butt? _____
- The final droid 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 droids. How many ultra power blasts did the last droid have?



Communication Code

Dr. Jax has recovered a secret communication that states who can defeat The Numerators. He knows that it came from the droids, but The Numerators are having trouble deciphering it. Octagon found a way to figure it out, but he needs your help. Solve for the missing number in the integer equations. Circle the correct answer to the right. Then use the solutions to figure out the answer.



- | | | | |
|---------------------------------|----------|----------|--------|
| 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 |

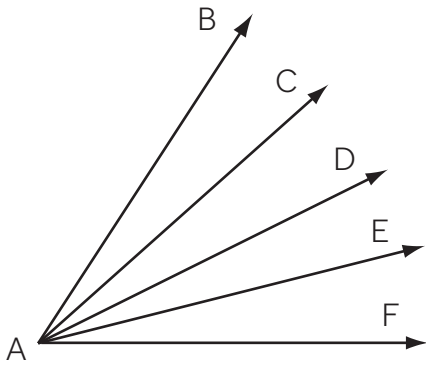
Who can defeat the Numerators?

$\frac{\quad}{4}$
 $\frac{\quad}{8}$
 $\frac{\quad}{6}$
 $\frac{\quad}{1}$
 $\frac{\quad}{9}$
 $\frac{\quad}{7}$
 !

What Is the Angle?

You have done an amazing job so far. Now it's time to help The Numerators defeat the droids once and for all. Dr. Jax has discovered the droids' plan of attack. The Numerators need your help measuring the angles in order to move into position to defeat them. Use your protractor to get your degree and write your answers in each blank.

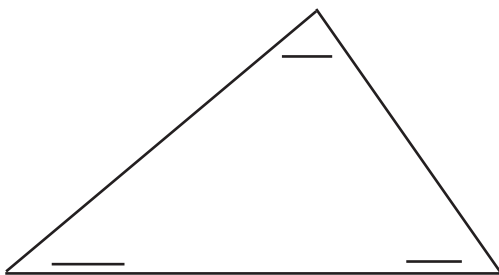
1. There are 10 different angles in the figure below. Name them.



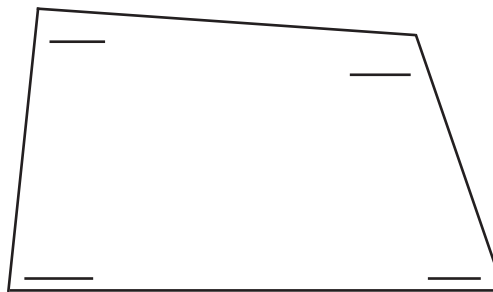
$\angle BAC$

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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



- $\angle A: 85^\circ$
- $\angle B: 55^\circ$
- $\angle C: 40^\circ$



- $\angle W: 92^\circ$
- $\angle X: 113^\circ$
- $\angle Y: 71^\circ$
- $\angle Z: 84^\circ$



Check out stjude.org/math to start fundraising online today!

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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!



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