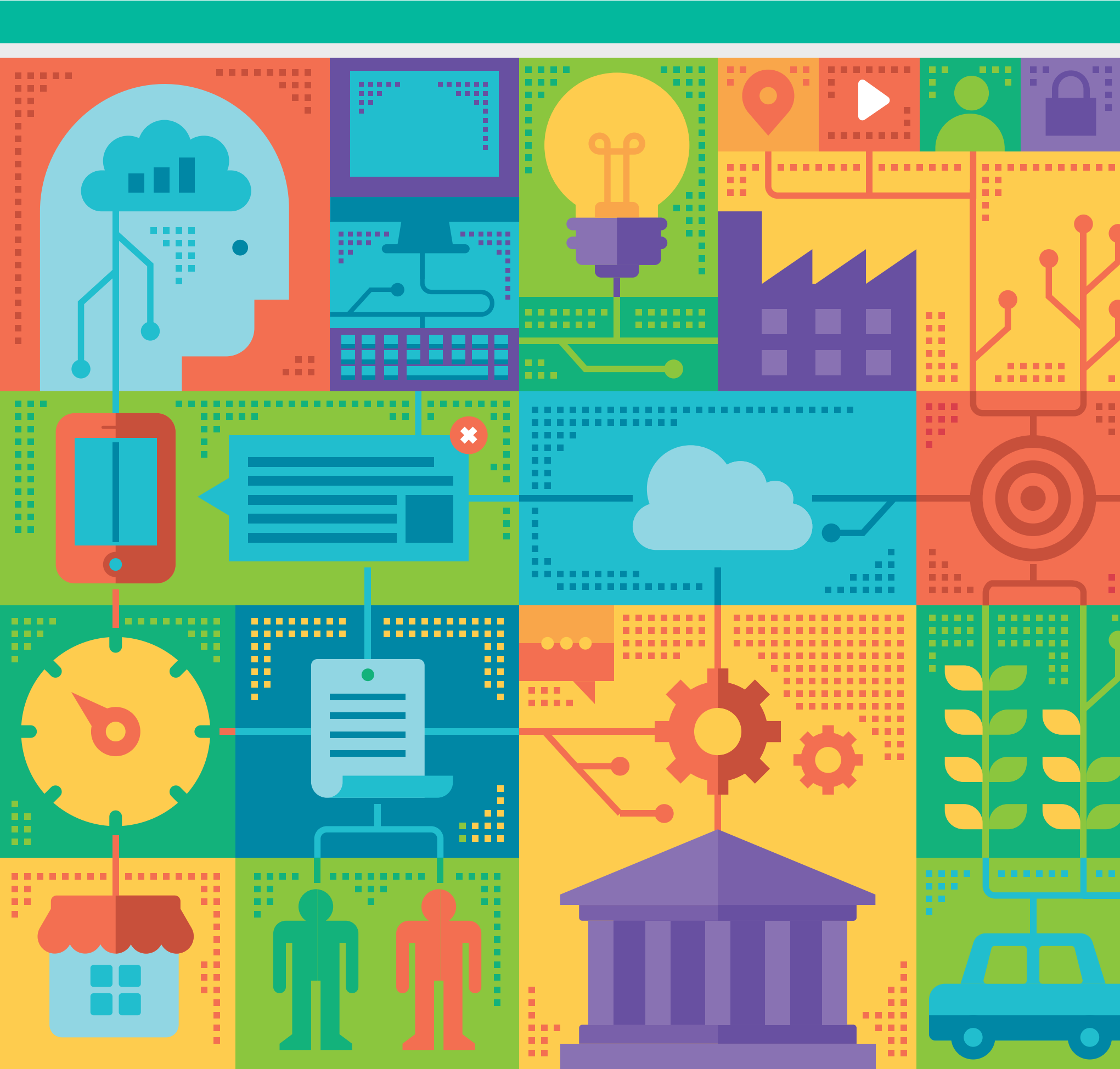


GROW

SMART

First Edition 2021

An initiative by **GROWTHPOINT**
PROPERTIES



DEAR GROWSMARTER

SUDOKU

Welcome to the first edition of the Growsmart newspaper for 2021! This edition is crammed with articles and activities that will give your year a flying start!

Keep your mind in tip top shape! Complete as many of the mathematics questions on these pages as you can.

Is your goal to conquer the business world? The worksheet on page 4 will help you evaluate all your brilliant business ideas. The entrepreneurship article will teach you about competition in the market place.

Head over to the article on fallacies on page 5 to sharpen those debating and logic skills. You can also find out how to structure your argument for your next debate.

Do you dream of being the next great inventor? Read about inventions by kids on page 6, or learn more about robotics

on page 10. The article on the Fourth Industrial Revolution on page 6 will give you a greater understanding of what the future may hold.

Take your writing and poetic skills to the next level! On page 9, you can learn about plot structure and euphemisms, as well as assonance and alliteration.

If you envision yourself as a globetrotter one day, you can read about fascinating festivals around the world on page 10. You can also learn more about the way animals experience the world.

Also be sure to try your hand at the science experiments. On page 12, you can learn how to make a solar oven or even create a laboratory at home!

All the best for your academic year ahead!

Until next time,
The Growsmart Team

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

Fill the grid with the numbers 1 to 9 so that each number is only used once in each row across, each column down and every 3 by 3 box. Do not guess the answer. Think logically about which numbers may appear, and especially which numbers may not appear in a block.

Source: mathinenglish.com

Answers: 9-7-3-4-2-5-1-8-6; 6-5-2-1-8-3-4-7-9; 1-4-8-7-6-9-2-5-3; 7-8-4-2-9-1-3-6-5; 5-1-9-3-7-6-8-4-2; 2-3-6-8-5-4-7-9-1; 3-6-1-9-4-7-5-2-8; 4-2-5-6-1-8-9-3-7; 8-9-7-5-3-2-6-1-4

MATHS

Calculate the following without written calculations.

1. 3 400 + 500 =

2. 3 000 x 200 ÷ 200 =

3. Half of 23 =

4. 3 000 ÷ ½ =

5. 14 x 3 =

6. 2 quarters of 1 000 =

7. The sum of 160 and 40 =

8. 8 ½ + 8 ½ =

9. 301 ÷ 2 =

10. 15 100 x 2 =

11. 150 ÷ 3 =

12. 100 + 110 + 120 =

13. 20 - 20 + 19 =

14. 1 125 - 25 =

15. 1 250 + 250 + 1 =

16. 121 - 22 =
17. Triple 130 =

18. Double 299 =

19. 20 x 3 ½ =

20. 999 ÷ 999 =

21. 450 x 0 x 2 =

22. 3 200 x 1 =

23. 999 + 1 - 49 =

24. 2 million + 7 million - 5 million =

25. 200 x 200 =

26. Half of 21 =

27. 1 quarter of 1 000 =

28. 0,1 + 0,01 =

29. 25 ½ + 25 ½ =

30. 200 + 210 + 1 =

31. 30 - 20 + 19 =

32. 1 225 - 25 =
33. 1 350 + 250 + 1 =

34. 123 - 22 =

35. 7 ½ + 11 ½ =

36. Triple 140 =

37. Double 399 =

38. 40 x 3 ½ =

39. 888 ÷ 888 =

40. 550 x 0 x 2 =

41. 5 200 x 1 =

42. 989 + 1 - 50 =

43. 5 million + 7 million - 5 million =

44. 300 x 200 =

45. Half of 23 =

46. 1 quarter of 2 000 =

47. 0,1 + 0,02 =

48. 400 + 200 + 100 =

Answers: 1. 3 900; 2. 3 000; 3. 11 ½ or 11,5; 4. 6 000; 5. 42; 6. 500; 7. 200; 8. 17; 9. 150 ½ or 150,5; 10. 30 200; 11. 50; 12. 330; 13. 19; 14. 1 100; 15. 1 501; 16. 99; 17. 390; 18. 598; 19. 70; 20. 1; 21. 0; 22. 3 200; 23. 951; 24. 4 million; 25. 40 000; 26. 10½ or 10,5; 27. 250; 28. 0,11; 29. 51; 30. 411; 31. 29; 32. 1 200; 33. 1 601; 34. 99; 35. 19; 36. 420; 37. 798; 38. 140; 39. 1; 40. 0; 41. 5 200; 42. 940; 43. 7 million; 44. 60 000; 45. 11½ or 11,5; 46. 500; 47. 0,12; 48. 700

Calculate the following. You may use any strategy. Remember to apply BODMAS.

1. $200\,000 + 20\,000 + 2\,000 + 200 + 20 + 2$

2. $1\,000 \times (29 + 771)$

3. $(35,5 + 35,5) \times 2$

4. $(29\,333 + 667) \div 100$

5. $1\,000 \times \frac{1}{4} \times 10 \times 4$

6. $1 \div 4 \times 20 \times 100$

7. $(2\,000 + 500) \times 40$

8. $(35\,347 + 53) + (5\,600 \times 1)$

9. $88\,888 \div 4 + 128 \times 2$

10. $(16\,500 - 16\,499) \div (16\,504 - 16\,500)$

11. $(3 \times 10) + (2 \times 1\,000) + 7 + (5 \times 100)$

12. $(51\,999 - 99) \div 2 + 3\,500$

Answers: 1. 222 222; 2. 800 000; 3. 142; 4. 300; 5. 10 000; 6. 500; 7. 100 000; 8. 41 000; 9. 22 478; 10. $\frac{1}{4}$ or 0,25; 11. 2 537; 12. 29 450

Solve the following problems. You need to be able to explain your answer mathematically.

1. What is the next number in this pattern? 0,13; 0,12; 0,11; 0,10; ...
A) 0,01 B) 0,1 C) 0,09 D) 0,9 E) 0,10

2. The perimeter (total length around) of a rectangle is 132 cm. If the width of the rectangle is 31 cm, what is the length?
A) 35 cm B) 101 cm C) 163 cm D) 326 cm E) 31 cm

3. Which fraction is the largest?
A) $\frac{1}{5}$ B) $\frac{1}{6}$ C) $\frac{1}{7}$ D) $\frac{7}{30}$ E) $\frac{7}{36}$

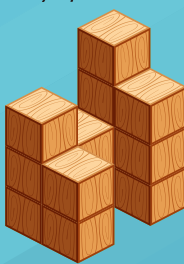
4. Find the 13th number in the sequence: 1; 4; 9; 16; ...
A) 26 B) 64 C) 143 D) 169 E) 128

5. I have a bag containing 16 coloured balls. 4 balls are red, 6 are green and the rest are blue. If I were to close my eyes and pull a ball out of the bag, what would my chances be to pull out a blue ball?
A) $\frac{1}{3}$ B) $\frac{3}{8}$ C) $\frac{4}{16}$ D) $\frac{10}{16}$ E) $\frac{1}{8}$

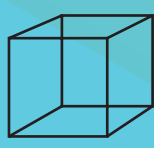
6. How many different ways are there to give someone 50c with South African coins?
A) 1 B) 4 C) 3 D) 5 E) 50

7. At the 2003 World Championships, Hestrie Cloete improved the women's African high-jump record by 1 cm to 2,06 m. What was the old record?
A) 1,06 m B) 1,96 m C) 2,05 m D) 2,059 m E) 2,01 m


8. How many blocks did Denver use to build this figure?



9. How many edges does the cube have altogether?



10. Sipho builds a sequence of triangular patterns with matches as shown below. In Triangle 1 there is one triangle and in Triangle 2 there are four triangles. How many triangles will there be in Triangle 10?





11. If my watch now shows 10:00, what will the time be 100 hours from now?
A) 10:00 B) 11:00 C) 12:00 D) 13:00 E) 14:00


12. A rectangular bathroom wall measures 3 m by 2 m. It is covered with square tiles measuring 20 cm by 20 cm. How many tiles are there?
A) 300 B) 30 C) 150 D) 200 E) 400


13. What is the only whole number between one and ten which does not divide exactly into 360?
A) 4 B) 6 C) 7 D) 8 E) 9


14. Which square is the same as the one on the right?

A) 


B) 


C) 


D) 

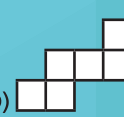
E) 


15. Which one of the following figures below cannot be folded along the lines to form a cube?

A) 

B) 

C) 

D) 

E) 

16. Which of these numbers will appear in the sequence: 7; 14; 21; 28; ...?
A) 4 236 B) 4 224 C) 4 235 D) 4 253 E) 2 442

Answers: 1. C; 2. A; 3. D; 4. D; 5. B; 6. B; 7. C; 8. B; 9. C; 10. 100; 11. E; 12. C; 13. C; 14. B; 15. E; 16. C

PAGE 3

PIZZA BATTLE

In the small town of Cheesetopia, there has always only been one place to buy pizza: Crispy Crust. Today, all of that is about to change. A new pizzeria, Slice Slice Baby, is opening its doors. For the first time, Crispy Crust will have competition for the pizza market in Cheesetopia. But it is also hard to be the new business in town. Can you help Slice Slice Baby compete with Crispy Crust for the pizza market?

Crispy Crust heard that a new shop is opening in Cheesetopia. In order to compete with the new shop, Crispy Crust decides to offer an incentive. If you buy two slices of pizza, you get a free cooldrink. Crispy Crust hopes that this incentive will make customers choose their pizza.

How can Slice Slice Baby compete? Which of these strategies would you follow?

- A. They can lower their prices
- B. They can offer a better product
- C. They can offer better customer service
- D. They can advertise
- E. They can offer an incentive

Can you think of any other ideas that Slice Slice Baby can use to compete? Remember, the more expensive the idea, the less profit they will make. Try to imagine what the result of a strategy would be. There are no wrong answers, but some strategies would be more effective. You can discuss your ideas with a teacher or business mentor.

Crispy Crust heard about your great idea for the new pizza store. Crispy Crust decides to compete by offering better customer service. Starting today, Crispy Crust is offering free delivery to help encourage customers to choose their pizza.
How can Slice Slice Baby compete? Choose an option from A to E, or think of a new idea.

Crispy Crust is doing well enough, but they hear that Slice Slice Baby is doing very well. Crispy Crust wants to continue bringing customers into the store. They decide they need to cut their prices to get customers to choose their pizza instead of Slice Slice Baby's. They lower their price from R20 a slice to R15 a slice.
How can Slice Slice Baby compete? Choose an option from A to E, or think of a new idea.

For as long as Crispy Crust and Slice Slice Baby are both in business, they will be competing with one another for the Cheesetopia pizza market, to get customers to choose their pizza.

Source: econedlink.org

WHAT DO YOU THINK?

1. What would the possible effects be of a second pizza shop opening in Cheesetopia?
2. What might happen if a third pizzeria, Eatalian Pisa, opens in Cheesetopia?

COMPETITION IN THE MARKETPLACE

- Competition in the marketplace means businesses compete for the same customers, sell similar products, or offer similar services.
- Businesses compete with each other by lowering their prices, revising their advertising strategy, offering incentives, making a better product or by having better customer service.
- Competition helps customers – it encourages businesses to offer incentives to earn business. Customers get a better selection, lower prices, better service or better products.
- Competition does not always help the customer. Too much competition could cause a price war, which could lead to a decline in quality or poor customer service. If prices are lowered too much, the business would need to save in other ways, such as using poor materials.

Possible answers: 1. Prices could go down; a shop could make a greater selection of pizza toppings available; new products like stuffed-crust pizza could be introduced; they could use incentives like free cooldrink; they could use events like a pizza-eating contest; they could offer better service 2. At first, the pizza shops might offer better products, incentives or prices. However, if a big price war happens, prices will go down, but the quality of the products may suffer. There may not be enough customers to keep all of the pizza shops in business.

PLAN TO SUCCEED

Fortune favours the prepared. You have noticed an entrepreneurial opportunity, or come up with a new business idea to fill a need in your community. You are itching to get started, but also a little worried. What if you invest time and money into this idea and it does not take off?

This worksheet will help you to evaluate your business idea and to measure its potential to succeed. Use the worksheet to assess the different features of your business idea.

Use your answers to consider whether your idea has enough positive features to be successful. Put yourself in your customer's shoes. Would you make use of your business? Are there enough positive features to convince you? If you answer "yes", your idea has a better chance of succeeding.

You can also use these features to advertise your business, or when you speak to potential customers or clients. Remember that people need an incentive to use a product or service. An incentive is the motivation or drive that persuades people to take up your offer. Look at the completed worksheet, and consider which features offer the most reward to customers or clients for making use of your business.

What is your business idea?		
Business feature	Yes/No	Explain your answer
1. Does the product or service offer significant savings to customers?		
2. Does the product or service solve serious problems?		
3. Does the product or service offer convenience to customers?		
4. Is there a big upside to using the product or service?		
5. Is there a downside to using the product or service?		
6. Are there many similar products or services available?		

CRITICAL THINKING

What is a **logical fallacy**? A logical fallacy is an error in reasoning. Knowing how to spot and identify fallacies is an important skill in debating. Ensure that your argument does not include fallacies, as logical errors will make your argument less convincing. If you can learn to spot fallacies in your opponent's argument, you can prove why their argument is invalid.

There are many types of fallacies, each with their own unique way of trying to convince you of an argument. The following list explains some of the most common logical fallacies.

CIRCULAR ARGUMENTS

This argument repeats what a person already assumed beforehand – it does not arrive at a new conclusion. A circular argument can be recognized when the conclusion of the result is also used as the evidence in the argument.

Example: "Speeding is against the law because it is wrong; I know it is wrong because it is against the law."

AD HOMINEM FALLACY

A personal attack on your opponent is called an ad hominem fallacy. Ad hominem is Latin for "against the man". Instead of a logical argument, attacking language is used. A person's view is

rejected or criticised as irrelevant, because of the person's appearance, background or personal characteristics. It is more than an insult – it is an insult used as if it were evidence in an argument.

Example: "Baloyi roots for a Brazilian soccer team. Clearly he's unfit to be a police chief in South Africa."

APPEAL TO IGNORANCE

An appeal to ignorance relies on what we do not know to support an argument. It does not prove any claim to knowledge. Consider the following two arguments:

"No one has ever been able to prove that aliens exist, so they must not be real."

"No one has ever been able to prove that aliens do not exist, so they must be real."

If the same argument strategy can be used to support opposite claims, then it is not a good argument strategy.

Example: "We have no evidence that aliens ever existed. They must have been so clever they destroyed all the evidence."

SLIPPERY SLOPE FALLACY

This fallacy works by taking a harmless starting point and moving through a number of small steps, to arrive at an extreme or unlikely result.

It is a claim about the future which assumes a chain of events without proving their likelihood. It suggests a ridiculous outcome without enough evidence.

Example: "You have to let me go to the party! If I don't go to the party, I'll be a loser with no friends. Next thing you know, I'll end up as a social outcast for the rest of my life!"

BANDWAGON FALLACY

This fallacy assumes something is true or right, because other people agree with it. This tactic is also common in advertising.

Example: "Drink this cooldrink - that is what all professional athletes do to stay hydrated."

APPEAL TO PITY

This is an emotional appeal that is not relevant to whether something is true or false. Feelings are used as facts, or to distract from the facts of the matter.

Example: "Teacher, you have to give me an A on this paper. I know it's not complete, but my grandmother passed away. Her last wish was that I'd get an A in this class."

Source: thebestschools.org

STRUCTURE YOUR ARGUMENT

"Don't raise your voice, improve your argument." - Desmond Tutu

Are you preparing for your next debate? Or do you simply want to win an argument with your friends on whether teachers should wear school uniforms? Use these steps to construct your argument by stating a claim, evidence, and impact.

1. CLAIM

Present your argument in a clear statement. This claim is one reason why you are in favour of or against the motion.

2. EVIDENCE

State the evidence that supports your claim. This can include research, statistics, references, quotes, and so forth. Remember to use trustworthy sources, such as books from the library or academic websites. If you use the internet to conduct research, activate a Safe Search before you start.

3. IMPACT

Explain why the evidence is significant. How does the evidence support your claim?

Repeat these steps for each argument. Place the most important arguments first. For example, "It is essential that all teachers wear school uniforms. This is true for three reasons. Firstly (state the most important argument)... Secondly..., Thirdly (state the least important argument)..."

Source: virtualspeech.com

I DISAGREE

As a serious debater, you have structured your argument and prepared for the debate. But how do you prepare for what the opposition might say? **Refutation** is the act of responding to an argument. A refute should answer the arguments that are already being debated. It should respond directly to the statements of the opposition. A refute provides a counterclaim, and promotes a direct challenge between the arguments. By following the four steps below, you can refute their argument in the heat of the moment.

STEP 1: 'THEY SAY...'

Refer directly to the opposition's argument and phrase it in a different way. State their point quickly and clearly.

STEP 2: 'BUT I DISAGREE...'

State your counterargument. This can be the opposite of the opposition's claim, or it can attack the reasoning or evidence of the opponent's claim.

STEP 3: 'BECAUSE...'

Now you will offer a reason or evidence to support your counterargument.

STEP 4: 'THEREFORE...'

Compare your refutation to the opponent's argument, and state why your argument is better.

Memorise the four steps before your next debate. Follow the structure for refutation to keep your cool no matter which argument the opposition presents.

Source: esuus.org

INVENTIONS BY KIDS

Some of the most creative inventions used in our daily lives were brought to us from the young minds of children. Some of these inventions were for fun, but some are solutions to problems children faced. After all, necessity is the mother of all inventions.

BRAILLE

In 1812, 3-year-old Louis Braille was injured and lost his vision. As a teenager, studying at the National Institute of Blind Youth in Paris, he came up with the idea of raised dots in unique patterns for others like him. From this the Braille system was developed, and in 1829 the first book in braille was released. In 1837, Louis added symbols for maths and music as well. Now Braille is available in every language to aid the visually impaired all around the world.

EARMUFFS

At the age of 15, Chester Greenwood was skating one day, when his ears hurt due to the extreme cold. He tried to use his scarf to cover his head and ears, but this did not seem to work. When he went home, he devised earmuffs by creating a wire frame with beaver skin pads sewn on the ends. In 1877, he patented his invention and went on to manufacturing these ear protectors to soldiers during the first World War.

TRAMPOLINE

In 1930, 16-year-old George Nissen was fascinated with trapeze artists. He wondered what would happen if they kept bouncing around when falling down on the net beneath them. This thought made him convert his parents' garage into a workshop. He constructed a metal frame with a canvas stretched over it. When he was a student, he perfected his contraption and later travelled around the world demonstrating it.

LIGHTING BAG

Njabulo Ndlovu and Vusimuzi Sihlangu, 15-year-old friends from Gauteng, wanted to find a solution to a persistent problem throughout South Africa. There is no reliable supply of electricity in Rantanda, the township where they live and go to school. This problem was interfering with their study time, so the teenagers created the Lighting Bag. A bag was fitted with a xenon light from a car, and connected to a car battery. This keeps the light running even when there is no access to electricity.

NUBRIX

Elijah Djan, from Gauteng, was 11 when he first came up with the idea of using recycled paper to make construction materials. He built his first

prototype of a brick made from paper in the same year. He saw the shortage for good, low-income housing, as well as a lack of recycling, and wanted to kill two birds with one stone. While he won a national science prize for his first bricks, he had to wait ten years to receive enough funding to test his idea further. Now, full tests for durability, fire resistance, thermal capability, acoustics and water penetration can be conducted. Elijah held on to his childhood idea for ten years, but for him the bricks are just a start. Eventually, he wants to create all different construction materials from recycled products.

PRIVATE SATELLITE

Ayesha Salle, Brittany Bull, Bhanekazi Tandwa and Sesam Mngqengqiswa are part of a group of 14 high school girls from Cape Town, working on Africa's first private satellite to send into space. They are designing and building payloads (the communications system) for a satellite that will hover in space, orbit the earth and scan the surface of Africa. The data received from the satellite is expected to be useful in determining Africa's position in food production – where food is growing, where more trees and vegetation can be planted, and to monitor forest fires and floods. The data could also help to form agricultural policies to stop the impending food and environmental crisis.

WHAT IS AIR?

We live in exciting times. The world is about to change radically, with the arrival of the next industrial revolution. But first, to understand the future, we must understand the past.

The **First Industrial Revolution** began in Great Britain in the late 18th century. It is a period in history when there was a large and rapid change in the way things were made. Instead of products being made by hand in small workshops, they were made in large quantities at a lower price by machines in factories. These products could then also be sold at a higher rate. People moved to the towns where factories offered more work, at a higher pay rate. On average, living standards and incomes increased. The most important invention of the First Industrial Revolution is the steam engine. It was used to power the factories and pump out deeper mines. It was also used in railway engines and steam ships. The steam engine replaced horses and human labour. Agriculture started to be replaced by industry, through mechanisation.

The **Second Industrial Revolution** was a period during the late 19th century when rapid innovation changed society again. This time, it was through the advancements made in electricity and steel production. Gas and oil also emerged as new energy sources. With the production of cost-effective steel, railroads were

expanded and more industrial machines were built. Women became a bigger part of the work industry. Other inventions include internal combustion engines, airplanes, telephones, cars and radio. These innovations led to the rise of mass production and assembly lines.

The **Third Industrial Revolution** started in the 1960's. The invention of the computer, the internet and electronics led to mass production becoming automated. Another source of energy emerges – nuclear energy. Programmable Logic Controllers and robots are the most important inventions of the Third Industrial Revolution, as these helped to give rise to a new era of automation.

Can you see any patterns in these three revolutions? Each revolution is characterised by rapid innovation, a new economic system, a new communication system and a new energy source. Each industrial revolution leads to an increase in manufacturing, and in certain jobs being replaced because of advancing technology.

Although some disagree, we are now said to be in the **Fourth Industrial Revolution**. The Fourth Industrial Revolution is characterised by the fusion of technologies. Lines between the physical, digital and biological worlds are becoming blurred. Think of cyber-physical systems like

driverless cars, 3D printing, smart robotics, and materials that are lighter and tougher. Alternative energy sources are on the rise, and the way in which manufacturing takes place is changing rapidly again.

But wait! Does this mean that we will be replaced by robots? Will we still have jobs when artificial intelligence continues to advance?

The great news is that you can work on your skills now! This does not necessarily mean that you need to start learning how to code on the computer tomorrow (though it will surely help!). Skill experts are predicting that the most important skills for hiring in 2030 will be active learning, fluency of ideas, learning strategies and originality. As you would guess, these are tasks that cannot be easily automated by a robot.

These skills may also sound very abstract. But what are you doing right now? You are actively learning! Active learning focuses on how you learn, rather than what you learn. With the rapid growth of technology, it becomes more important that you know how to learn, than to study specific content. The content may change too quickly, but your ability to keep learning new skills will always give you the edge!

DO YOU KNOW THESE WORDS?

acclimatise
adolescent
altruism
archaeology
assertive
autism
bankrupt
bequeath
bibliography
bougainvillea
brochure
bureaucrat
cantankerous
choreograph
clandestine
conglomerate
culminate
cyberspace
debauchery
dexterity
discourteous
disseminate
dreadful
dutifully

eavesdropping
embodiment
endeavour
enigmatic
espionage
extremist
facetious
factorise
feasible
figurative
fortuitous
frenetic
garrulous
genetics
gorgeous
gregarious
guarantee
haemorrhage
heredity
hiatus
horrify
hydroponics
iguanodon
immensely

imminent
incarcerate
indomitable
infrastructure
irresistible
jeopardise
jouissance
jubilant
juvenile
juxtapose
kaleidoscope
kitchenette
kleptomania
knuckle
labyrinth
lexicography
linguistic
loath
luxuriant
lyrics
magnanimous
malfeasance
mausoleum
menagerie

minimalist
mnemonic
monogamous
multiplicity
nauseous
nasogastric
nepotism
neuroscience
nostalgia
nuisance
obstreperous
occurrence
odious
omniscient
oesophagus
opulent
ostentatious
paediatrics
patriarchal
perpetrate
persuasive
phenomenon
picturesque
poignant

prerogative
quadrilateral
querulous
quiescent
quintessential
rapturous
reconnaissance
reminisce
resilience
resurgent
rheumatism
ricochet
rogue
sanctimonious
sceptical
septicaemia
simultaneously
skirmish
somnambulism
surreptitious
symposium
tantalise
temperament
therapeutic

toddler
torrential
tranquil
turbulence
typhoid
unobtrusive
utensil
vaccine
vengeance
vertebrate
vigorous
vociferous
vulnerable
vulture
whirl
wilderness
worship
xenophobia
yacht
youth
zealous
zest
zombie
zone

TAKE THE HIGH ROAD

Fill in the missing words to complete these idioms about transport.

1. All _____ on deck

2. Light at the end of the _____

3. Cross the _____ when you get to it

4. One's _____ of thought

5. Don't put the _____ before the horse

6. Rock the _____

7. Hit the ground _____

8. That _____ has sailed

9. Fly under the _____

10. Take the _____ out of someone's sails

11. Throw someone under the _____

12. Jump on the _____

Answers: 1. hands; 2. tunnel; 3. bridge; 4. train; 5. cart; 6. boat; 7. running; 8. ship; 9. radar; 10. wind; 11. bus; 12. bandwagon

W₄

O₁

R₁

D₂

L₁

A₁

D₂

D₂

E₁

R₁

Change one letter in each word to move to the next step of the word ladder. Use the clues.

b	r	a	i	n
s	m	a	r	t

plait

trademark

dull

empty

a colour

lazy or loose

pile

plain or harsh

begin

Source: [easyteacherworksheets.com](https://www.easyteacherworksheets.com)

Answers: brain; braid; brand; bland; blank; black; slack; stack; stark; start; smart

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VUYO & GEMMA AWESOME FRIENDS

Michael could barely wait to get to his new class on the first day of school. He wanted to make sure he gets the best seat close to his friends. As his classmates poured into the classroom, the seats filled quickly. The hubbub of friends catching up after the long summer holiday was very loud.

Just as Michael started wondering why a desk next to him was still open, all the noise in the classroom came to a sudden stop. You could hear a pin drop. Confused, Michael looked up from his conversation with his friends, and saw a new learner coming into the classroom. But... she was in a wheelchair! Soon everyone was whispering and pointing. Michael was also curious, but thought that all the whispering was insensitive. "Shall I move the chair, then you can sit at this desk?" he offered the new learner. Shyly, she nodded.

They were waiting for their teacher to arrive, but Michael could not help trying to steal glimpses of the new learner from the corner of his eye. "If you have questions, you can ask me, you know." Michael jumped. He felt embarrassed that he was caught staring. "My name is Michael. What is your name? And... may I ask, why do you need a wheelchair?" The new classmate smiled warmly. "My name is Monique. I have muscular dystrophy. It means my muscles work a bit differently, and the wheelchair helps me to move around."

Michael did not know what to say next. He did not know anything about muscular dystrophy. He was about to ask, when he noticed a sticker on Monique's wheelchair. "Are you a fan of AmaStokkie? They are my favourite team!" Monique's eyes lit up. "Mine as well!" she exclaimed. They immediately started discussing tactics, drag flicks and goals. Michael was so excited to find a new friend that shared his passion for hockey. Soon the two became fast friends.



Later that year, the senior dance was announced. Michael could not wait to ask Monique to accompany him. She graciously agreed, and both started looking forward to the special event.

At the dinner table that evening, Vuyo made an announcement. "I received a phone call from the school headmistress today, and then another phone call from the Mouseville Gazette. They want to do a story on Michael and Monique going to the senior dance together!"

Everyone at the dinner table cheered, but Michael was shifting uncomfortably in his seat. "What is the matter, Michael?" Gemma asked. "I... I don't think I want to do an interview with the newspaper. I don't want Monique to feel that I asked her to the dance as some sort of good deed. I asked her because she is my friend. We have so many things in common, much more than our differences."

Vuyo looked thoughtful. "That is a wise and caring decision, Michael. I will phone the newspaper and decline the interview. You are absolutely right – treating friends with dignity and respect should be an everyday occurrence, and not something newsworthy."

"We can help you to pick a bouquet for Monique for the big night!" offered Petra. "You definitely need our help if you want to impress her," Emma teased.

When the senior dance rolled around, both Michael and Monique enjoyed a memorable evening. What could be better than sharing this experience with your friend?

TRIVIA QUIZ

1. What is a person who repairs shoes called?
A. Carpenter B. Cobbler C. Blacksmith D. Mechanic
2. Where is rubber obtained from?
A. Trees B. Rocks C. Oils D. Caves
3. Who discovered natural radioactivity?
A. Curie B. Rutherford C. Fermi D. Becquerel
4. Where in the body is the patella?
A. Foot B. Elbow C. Shoulder D. Kneecap
5. Which Mediterranean country does copper get its name from?
A. Monaco B. Croatia C. Cyprus D. Turkey
6. What is the distance around a circle called?
A. Diameter B. Radius C. Length D. Circumference
7. Which of these planets do not have rings?
A. Venus B. Neptune C. Uranus D. Saturn
8. Which country first made use of paper money?
A. Pakistan B. India C. China D. France
9. What is pogonophobia a fear of?
A. Beards B. Snakes C. Bears D. Nails
10. What is a group of owls called?
A. Parliament B. Herd C. Colony D. Swarm
11. Which vitamin helps keep bones strong?
A. Vitamin C B. Vitamin K C. Vitamin A D. Vitamin D
12. Where did the Olympic Games start?
A. Austria B. China D. India D. Greece
13. What are trout, carp and barracuda?
A. Reptiles B. Primates C. Fish D. Birds
14. Which galaxy is Earth located in?
A. Milky Way B. Ursa Major C. Andromeda D. Zodiac

Source: thelearningapps.com

Answers: 1. B; 2. A; 3. D; 4. D; 5. C; 6. D; 7. A; 8. C; 9. A; 10. A; 11. D; 12. D; 13. C; 14. A

MIXED FEELINGS

Connect these idioms about feelings with their correct meanings!

- | | |
|----------------------------|--------------------------------|
| 1. A chip on your shoulder | A. To laugh uncontrollably |
| 2. A fish out of water | B. To feel sad or depressed |
| 3. As hard as nails | C. Eager for confrontation |
| 4. At the end of your rope | D. To lose your temper |
| 5. Fly off the handle | E. To be very happy |
| 6. Foaming at the mouth | F. To feel inferior |
| 7. In stitches | G. To have lost all patience |
| 8. On cloud nine | H. To feel anxious or nervous |
| 9. On pins and needles | I. To feel uncomfortable |
| 10. On the warpath | J. To be frustrated or annoyed |
| 11. To feel blue | K. To be tough and unfeeling |
| 12. Up the wall | L. To be very angry |

Answers: 1. F; 2. I; 3. K; 4. G; 5. D; 6. L; 7. A; 8. E; 9. H; 10. C; 11. B; 12. J

PLOT TWIST

A **plot** is what happens in a story. The **structure** is the way the story is written. Understanding basic plot structure can help you to analyse your favourite book or to write a story that will keep your readers nailed to the page.

EXPOSITION

The exposition, or hook, is the introduction of the story. The author introduces characters and the setting of the story here. It provides background knowledge and details that are relevant to the storyline. The exposition aims to engage the reader with a storyline they want to keep reading.

- Who are the characters?
- What character traits, feelings or actions do you need to share at the very beginning?
- What problems could the protagonist face?

CONFLICT

The conflict is what the story will mostly be about, and helps to drive the story forward. It is usually introduced early in the story. The author gives the protagonist an internal or external conflict, and use character traits, feelings, actions and dialogue to show the extent of the problem. The reader is left wondering how the problem will be solved.

- What problem does the protagonist face?
- Are other characters involved in the problem?
- What caused the problem in the story?
- How could the problem possibly be resolved?

RISING ACTION

The rising action is the events that help the reader to understand the conflict taking place. It occurs after the problem is introduced, and leads up to the climax. It includes events that build tension between the characters, or a series of challenges the protagonist has to deal with. It could also give clues of what the climax or resolution might be.

- How does the problem impact the protagonist?
- How have the events helped you to understand the protagonist more?
- What clues can be given about the climax or resolution?

CLIMAX

The climax is the most exciting or surprising part of the story, also called the turning point. This is usually the most important event. At the climax, the author will surprise the reader, force the protagonist to face the challenge in the story, and create a change in the direction of the storyline.

- How has the problem intensified?
- How has the protagonist come face to face with the problem?
- How has the author been building suspense in the story to lead to the climax?

FALLING ACTION

The falling action are the few events that happen

after the climax. These events lead up to the solution of the problem. The author will decrease the tension in the story, and start to move the protagonist towards reaching a solution to the problem. Any questions the reader might have are answered, and loose ends are starting to tie up.

- What events are taking place in the story that are leading up to the resolution?
- How is the tension from the conflict decreasing?
- How are the characters' feelings and actions changing?

RESOLUTION

The resolution usually happens at the end of the story. The main conflict is solved, and any loose ends are tied up. At the resolution, the author will share the solution to the problem, reveal the lesson the protagonists learned, provide closure to the story, and possibly reveal a twist or turn.

- How was the problem solved?
- What lesson did the protagonist learn?
- How are the antagonist and protagonist different at the end of the story?
- What could happen next if the story continued?

Protagonist: The protagonist is the main character in the story. They are usually the hero at the end of the story.

Antagonist: The antagonist is usually in conflict with the protagonist. They are often portrayed as the villain in the story.

ALLITERATION OR ASSONANCE?

Alliteration and assonance are literary devices that are used to create a musical effect or add patterns to your writing.

Alliteration is the repetition of a consonant sound at the beginning of a series of words.

Example: Samkelo Sithole sings many silly songs.

Assonance is the repetition of the same vowel sounds either at the beginning of words or inside the words.

Example: Boy, what a long song.

Write down whether the sentences below use alliteration or assonance, and underline the repeating sounds.

1. I find this line difficult to complete in time.
2. Pravin ate a perfect piece of peach pudding.
3. The squeaky wheel gets the grease.
4. The boy bounced the ball in the backyard.
5. Can Clint carry lots of carrots?
6. I must confess that in my quest I felt depressed and restless.

Answers: 1. Assonance: I find this line difficult to complete in time.
2. Alliteration: Pravin ate a perfect piece of peach pudding.
3. Assonance: The squeaky wheel gets the grease.
4. Alliteration: The boy bounced the ball in the backyard.
5. Alliteration: Can Clint carry lots of carrots?
6. Assonance: I must confess that in my quest I felt depressed and restless.

FIGURES OF SPEECH: EUPHEMISM

A euphemism is a word or phrase used to say something harsh or unpleasant in a more polite way. Euphemisms present the truth in a more agreeable way, which makes it an important tool in conversations, at work or in literature.

There are different types of euphemisms, depending on the aim of the message.

- To soften an expression
Example: saying "preowned" instead of "used", or "deceased" instead of "dead"
- To be polite
Example: saying "powder your nose" instead of "going to the toilet" when you are in company
- To calm down tense situations
Example: saying "casualties" instead of "people that were killed", such as in political situations
- To make fun of an uncomfortable situation
Example: saying "bite the dust" instead of "die"

Can you connect the euphemism with the correct blunt phrase?

- | | |
|------------------------|---------------|
| 1. Under the weather | A. Overweight |
| 2. Six feet under | B. Unemployed |
| 3. Between jobs | C. Ill |
| 4. Full-figured | D. Deceased |
| 5. Put to sleep | E. Blind |
| 6. Visually challenged | F. Euthanise |

Source: [kidskonnnect.com](https://www.kidskonnnect.com)

Answers: 1. C, 2. D, 3. B, 4. A, 5. F, 6. E

FANTASTIC FESTIVALS

Do you wish to be a globetrotter and see the world one day? Wherever you are, there is always a reason to celebrate! Have a look at these five festivals from around the world.

BORYEONG MUD FESTIVAL

Don't be a stick in the mud! Boryeong, South Korea, hosts a mud festival every summer, using mud trucked in from the region's mud flats. Festivalgoers can soak in mud-filled plastic pools, race on skis over a muddy course, or get their faces painted with coloured mud.

LA TOMATINA

Every August, Buñol, Spain, throws a festival that features a massive tomato food fight. Around

20 000 people participate, hurling over a hundred tons of tomatoes at each other. The fruit that is used is reportedly overripe and unlikely to sell in stores. What a juiced-up celebration!

WISCONSIN CHEESE FESTIVAL

How cheesy! Every June people gather in Little Chute, Wisconsin, to celebrate cheese. Wisconsin is one of the top cheese producers in the United States. In addition to cheese tastings, visitors can watch artists carve sculptures out of 20-kilogram blocks of cheddar.

HAIR FREEZING CONTEST

Brrr! Every February, a winter celebration takes place in the frigid province of Yukon, Canada.

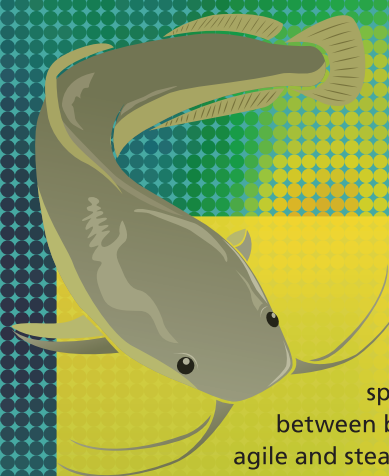
Participants in the annual hair freezing contest dunk their heads in the hot water of the Takhini Hot Pools. Then they create frosty hairstyles, by shaping their hair as it freezes in the cold air above. Temperatures can reach -30 degrees Celsius or lower at the time of the contest!

CAPE TOWN KITE FESTIVAL

Let hope fly! Every October, around 20 000 people attend the Cape Town International Kite Festival in Muizenberg. Kite designs from all across the world can be seen flying in every form and colour. The incredible kite creations represent a lifeline of hope, and the festival aims to create awareness around mental health.

Source: kids.nationalgeographic.com

SUPER SENSES



Have you ever imagined what it would be like to be Spider-Man? To shoot spider webs and swing between buildings? Or to be as agile and stealthy as Catwoman?

These real-life animals have super senses that will make even superheroes green with envy!

1. Crocodiles have thousands of small receptors around their jaw line. This allows them to sense the presence and location of animals around them from a long way off.

2. Butterflies use their feet to taste the nectar of flowers.

3. Catfish have tiny hairs on their bodies that are extremely sensitive to vibrations. It is believed that the catfish can detect earthquakes days in advance because of this.

4. Snakes use their tongues to smell. At night, they use special infrared sensory organs to locate and hunt their warm-blooded prey.

5. Ants have a sense of smell that is so strong, it can direct them to food from several metres away. They use special nerve cells in the tiny hairs on their antennae to smell odors.

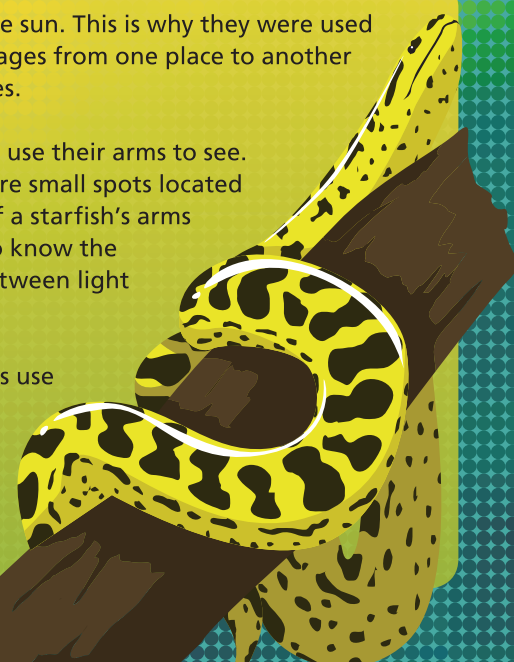
6. Pigeons have a sense like a built-in compass, which allows them to find their way using knowledge of the earth's magnetic field and the

position of the sun. This is why they were used to carry messages from one place to another in earlier times.

7. Starfish use their arms to see. There are small spots located at the ends of a starfish's arms that help it to know the difference between light and dark.

8. Crickets use their legs to hear.

Source: mocomi.com



INTO THE FUTURE

Have you ever watched a movie about robots? These movies are usually about good and evil robots that fight each other, and the humans who get in the middle. In real life, robots play a helpful role.

Robots do jobs that can be dangerous for humans. For example, some robots defuse landmines in war-stricken countries. Others work in harsh environments, like the bottom of the ocean or on the planet Mars.

Robots are also often used to perform tasks that are repetitive, which may injure a human worker. Think of the powerful robots that are needed to manufacture cars. Robots are also sometimes used to perform dull tasks,

which may be demeaning to human workers.

At the heart of every robot is a robotics engineer. A robotics engineer thinks about what a robot needs to do and works with several engineering disciplines to design and put together the perfect robot. A robotics engineer designs robots, maintains them, develops new applications for them, and conducts research to expand the potential for robots. Robots can be used in manufacturing, agriculture, aerospace, mining, and medicine. It is a rapidly growing field that is used in many industries.

Does this sound like your dream job? You will need excellent problem-solving skills, creativity, mechanical aptitude, attention to detail, good

teamwork skills, and strong oral and written skills. Subjects you can study in high school include physics and chemistry, geometry and algebra, computer science and applied technology.

The exciting news is that the projected job growth for robotics engineers is too slow. This means that there is a high demand for this job, with not enough engineers to fill it yet.

If you start now, you can give yourself the edge. Start working on the skills mentioned above, visit the library to teach yourself about coding and see if there are any local robotics groups that you can join. Your future is now!

Source: sciencebuddies.org

THE DIFFERENCE BETWEEN SALT AND FRESH WATER

Everyone loves a day at the beach! Have you ever gone swimming in the sea, and accidentally swallowed a mouthful of seawater? The salty water probably made your throat burn. On the other hand, if you go hiking to a waterfall, or have a picnic by the river, you might have noticed that the water is clear and unsalted.

Fresh water

- River water consists mostly of rainwater - it is always running and soaked by soil. Rainwater is not salty, because clouds bring rain with the help of vapour. As vapour is unsalted, the rainwater that ends up in rivers is fresh.
- Rivers are constantly running and pick up minerals and salt from the rocks they pass by. Rivers run towards the ocean and when the river water mixes with the ocean water, the salt mixes along with it.
- Rivers are constantly being restocked by fresh

water from rain and springs, so it does not taste salty. But by the time the rivers reach the ocean, the ocean collects all of the river water's salt and minerals. The ocean floor also contains minerals. These minerals dissolve in the water, which adds to the salinity of the sea.

Salt water

- The process of evaporation starts when the heat of the sun evaporates water from the ocean and produces vapour. When the seawater evaporates, the salt is left behind. The salt is too heavy to become vapour, so the ocean water remains salty. Millions of years have passed – with the constant evaporation of seawater and the inflow of river water, our oceans have reached a stagnant point of salinity.
- There are certain lakes that are saline. These lakes do not have escapes to rivers or to the

sea. The water in the lakes evaporated, but the salt was left behind again.

- Submarine volcanism also contributes to the salt content of the sea. These are eruptions of volcanoes under the ocean. The seawater reacts with the hot rocks that erupt from the volcanoes, and it dissolves the minerals in the rocks. This adds even more salt to the ocean.

Water Facts

- 96% of the earth's water is sea water.
- Sodium chloride, or common table salt, is the most prevalent salt in the oceans.
- 7½ litres of sea water contains one cup of salt.
- The Ganges, Yangtze and Indus are the most polluted rivers on Earth.
- 65% of drinking water comes from rivers and streams.

Source: mocomi.com

GENERAL KNOWLEDGE

1. What are the four oceans called? _____
2. How many strings does a violin have? _____
3. What are animals that only eat plants called? _____
4. What does a botanist study? _____
5. What is the centre of a hurricane called? _____
6. What kind of creature is a Komodo dragon? _____
7. On which continent is the South Pole located? _____
8. Which is the largest desert in the world? _____
9. From which flower is vanilla extracted? _____
10. Which fabric is made by worms? _____
11. What does a cartographer make? _____
12. Which planet has a ring of rocks and ice? _____

Source: funquizzes.uk

Answers: 1. Arctic, Atlantic, Indian and Pacific; 2. Four; 3. Herbivore; 4. Plants; 5. Eye; 6. Lizard; 7. Antarctica; 8. Sahara; 9. Orchid; 10. Silk; 11. Maps; 12. Saturn

THE CAPE FLORAL KINGDOM

As South Africans, we are proud of our beautiful country. We cheer for the Springboks, are loyal fans of Bafana Bafana, and we root for the Proteas. But what do you know about the home of our national flower? The king protea, from which our cricket team took its name, is the largest of all proteas, and is one of many species found in the Cape Floral Kingdom.

The Cape Floral Kingdom is one of six floristic regions in the world. Each of these regions has special plant life. The Cape Floral Kingdom is the only floristic region within a single country, and is the smallest of all the floral kingdoms. It lies along the southwestern coast of South Africa, stretching from Clanwilliam to Port Elizabeth. It covers an area of 90 000 km².

Despite its small size, the Cape Floral Kingdom has a larger variety of plants than any of the other floral kingdoms. It contains about 9 000 plant species, and about 70% of them grow only in this region. Such plants are called endemic plants. Most of the vegetation is known as fynbos, or scrubland. It is a unique mixture of plant species that consists of four main types: heaths, plants that look like reeds, plants that grow from bulbs, and large woody trees and shrubs. Most of the plants are evergreen with hard leaves.

Some plants in the Cape Floral Kingdom have great economic value, such as rooibos and honeybush, which are used to make tea and other products. However, hundreds of species have been threatened by the growth of farming, plantations, and cities. A number of species have become extinct.

DID YOU KNOW?

- The other floral kingdoms are the Boreal, Paleotropical, Neotropical, Australian, and Antarctic floristic regions.
- The Cape Floral Kingdom covers 0.5% of Africa's land, but it contains 20% of Africa's plant species.
- The Cape Floral Kingdom is a UNESCO World Heritage Site.

Source: kids.britannica.com



ACIDS AND BASES

Every serious scientist has a laboratory. This experiment will help you to create a laboratory at home! Test for acids or bases using ordinary items around the house.

YOU WILL NEED:

- Small red cabbage
- Large pot x 2
- Boiling water
- Strainer
- Glass jars
- Medicine dropper
- Notebook
- A series of household items to test, such as:
 - fruit juice
 - vinegar
 - baking soda
 - cleaning products
 - shampoo
 - clear cooldrink
 - rainwater

INSTRUCTIONS:

1. Grate the red cabbage and place it in the pot
2. Pour boiling water into the pot; enough to just cover the cabbage.
3. Leave the cabbage mixture to steep until the liquid is room temperature. Stir it occasionally. The liquid should be red-purple in colour.
4. Place the strainer over the second pot. Pour the mixture through the strainer to remove the cabbage pulp.
5. Press down on the pulp to squeeze more liquid out of it.
6. You should now have a clear liquid that is

- either purple or blue in colour. This is your indicator solution.
7. Add the indicator solution to the glass jars – one jar for each solution you want to test.
 8. Add drops of the liquid you want to test into a glass jar, until you see that the solution is changing in colour.
 9. Gently swirl the jar as you add the drops, without spilling the solution.
 10. The colour of the liquid will change depending on the pH. Use the pH table on the right to determine the pH balance of the liquid by observing the colour.
 11. Record the type of liquid, a description of the solution and the pH in the notebook.
 12. Use a different glass container with indicator solution and repeat the steps to add drops of another liquid you want to test.
 13. Record the results for each liquid you test, using a separate glass jar with indicator solution for each liquid.
 14. Which household items are acids, and which are bases?

NOTE:

Being a scientist is a serious responsibility! Be very careful when working with boiling water or cleaning products. Ask a parent or teacher to assist you. Also remember to clean your instruments once the experiment is complete. Be careful that the different household test items do not mix with one another, as it may cause a reaction. Only mix the household items with the indicator.

Source: [sciencebuddies.org](https://www.sciencebuddies.org)

TERMINOLOGY:

- **Indicator:** A substance that tests if another substance is an acid or a base.
- **Acid:** A chemical compound with a pH value between 0 to 7. It tastes sour and is corrosive.
- **Base:** A chemical compound with a pH value between 7 to 14. It tastes bitter and feels soapy.
- **pH:** A scale that indicates whether something is an acid or a base, and how reactive it is. The scale goes from 1 to 14, with 7 being neutral. Water has a pH of 7. Acids with a low pH of around 1 and bases with a high pH near 13 are the most reactive and dangerous.

pH TABLE

pH	Colour	Acid or Base
2	Red	Acid
4	Purple	Acid
6	Violet	Acid
8	Blue	Base
10	Blue-green	Base
12	Green-yellow	Base

SOLAR-POWERED TREATS

This experiment will show you how to make a solar-powered oven to toast your own treats.

YOU WILL NEED:

- Cardboard pizza box
- Aluminium foil
- Clear plastic wrap
- Black paper
- Tape
- Glue
- Pencil or wooden skewer
- Scissors
- Marshmallows, biscuits and chocolate

INSTRUCTIONS:

1. Cut a flap in the lid of the box, keeping one side attached to the box. Bend the flap to form the oven door.

2. Glue the black paper to the bottom of the box on the inside. The black colour will absorb the heat from the sun.
3. Glue the aluminium foil to the inside of the oven door. The foil will reflect sunlight into the oven.
4. Tape the plastic wrap over the opening in the lid of the box, where the door was. This will allow the air inside the box to heat up, but the plastic wrap will keep the heat trapped inside the box.
5. Place the marshmallows inside the oven. If you like, you can add biscuits beneath the marshmallows, or chocolate on top as well.
6. Place the oven outside in the sun.
7. Use the pencil or wooden skewer to prop the lid open at an ideal angle.
8. Wait until the marshmallows puff up from the heat. Depending on the weather, this could take about 2 hours.
9. Enjoy your baked treats!

VARIABLES:

You can recreate the experiment with the following variables, to test the effectivity of different ovens.

- Use a different colour paper
- Use the oven under different outside temperatures
- Use different box sizes or different oven door sizes
- Use different cooking times

Which variables allowed the oven to function best? Or to create the tastiest treats? The proof is in the pudding!

Source: [desertchica.com](https://www.desertchica.com)