

GROW SMART

An initiative by
GROWTHPOINT
PROPERTIES 

 **LIMPOPO**
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Practise Edition 2020

PRACTISE EDITION





DEAR GROWSMARTER

Welcome to the Growsmart Practise Edition for 2020! Ready to learn more about the world around you? Let's go!

This newspaper is jam-packed with fun facts, the wonders of science, creative writing tips and enough sums to help you ace that test.

See if you can complete ALL the activities. The cool science experiments too, so you can shock your friends with fake snot!

Have you ever taken part in a debate? If you have no idea what we're talking about, don't worry. You'll be introduced to this awesome activity that will boost your confidence and improve your general knowledge. It's fun, we promise!

Good luck with the Growsmart competitions for the year.

Until next time,
The Growsmart Team

MATHEMATICS

ANSWER AS MANY AS POSSIBLE. DO NOT PAUSE IF YOU DO NOT KNOW THE ANSWER IMMEDIATELY.

- | | | |
|--------------------------------|---|--|
| 1. $29 + 11 =$ _____ | 17. $13 \times 3 =$ _____ | 33. $5\frac{5}{8} + \frac{4}{8} =$ _____ |
| 2. $16 + 10 + 06 =$ _____ | 18. $1\ 000 \div 500 =$ _____ | 34. $750 + 150 =$ _____ |
| 3. $125 - 5 =$ _____ | 19. $17 \times 20 =$ _____ | 35. $13 + 12 + 15 =$ _____ |
| 4. $250 + 250 =$ _____ | 20. $190 \times 2 =$ _____ | 36. $177 = 147 +$ _____ |
| 5. $119 - 100 =$ _____ | 21. $120 \times 2 \times 2 =$ _____ | 37. $440 = 140 +$ _____ |
| 6. $110 + 110 =$ _____ | 22. $100 \times 10 \div 100 =$ _____ | 38. $1\ 091 -$ _____ $= 1000$ |
| 7. $299 + 2 - 1 =$ _____ | 23. $44 \div 11 =$ _____ | 39. $345 + 1 =$ _____ |
| 8. $300 \times 3 =$ _____ | 24. $15\ 000 \times 2 =$ _____ | 40. $15 - 13 + 18 =$ _____ |
| 9. $100 \div 100 =$ _____ | 25. $500 \times 3 =$ _____ | 41. $75 \times 100 =$ _____ |
| 10. $4\ 500 \times 0 =$ _____ | 26. $280 \div 2 =$ _____ | 42. $1 \times 20\ 000 =$ _____ |
| 11. $90 \times 90 =$ _____ | 27. $630 \div$ _____ $= 70$ | 43. $15 \times 15 =$ _____ |
| 12. $999 + 2 - 2 =$ _____ | 28. $5\ 000 \div 5 =$ _____ | 44. $1\ 999 \times 0 =$ _____ |
| 13. $3 \times 300 =$ _____ | 29. $1\ 000 \div 2 \times 2 =$ _____ | 45. $100 \div 1\ 000 =$ _____ |
| 14. $2\ 000 \times 20 =$ _____ | 30. $1\ 000 + 1\ 200 =$ _____ | 46. $0,3 + 0,7 =$ _____ |
| 15. Half of 13 = _____ | 31. $1\frac{1}{2} + 5\frac{1}{2} =$ _____ | 47. $1,5 + 1,5 - 3,0 =$ _____ |
| 16. $200 \div 4 =$ _____ | 32. $0,1 + 0,01 =$ _____ | 48. $0,4 \times 0,8 =$ _____ |

Answers: 1. 40; 2. 32; 3. 120; 4. 500; 5. 19; 6. 220; 7. 300; 8. 900; 9. 1; 10. 0; 11. 8100; 12. 999; 13. 900; 14. 40 000; 15. $6\frac{1}{2}$; 16. 50; 17. 39; 18. 2; 19. 340; 20. 380; 21. 480; 22. 10; 23. 4; 24. 30 000; 25. 1500; 26. 140; 27. 9; 28. 1000; 29. 1000; 30. 2200; 31. $7\frac{1}{2}$; 32. $0,11$; 33. $6\frac{1}{8}$ or $5\frac{5}{8}$; 34. 900; 35. 40; 36. 30; 37. 300; 38. 91; 39. 346; 40. 20; 41. 7500; 42. 20 000; 43. 225; 44. 0; 45. 0; 46. 1; 47. 0; 48. 0,32

CALCULATE THE FOLLOWING.

1. $4\ 250 + 100 + 1 =$ _____
2. $40\ 000 \div (0 + 20\ 000) =$ _____
3. $99\ 901 \times 100 + 2 =$ _____
4. $23\ 550 \times 1\ 000 \times 10 =$ _____
5. $625 \div 25 \times 2 =$ _____
6. $(26\ 999 + 101) \times 100 =$ _____
7. $3\ 200 + (18\ 000 - 12\ 000) =$ _____
8. $35\ 000 \times 0 \div 1 =$ _____
9. $89\ 588\ 222 \div 2 + 29\ 000 =$ _____
10. $(51\ 999 - 99) \div 2 + 3\ 500 =$ _____
11. $45 + 15 - 25 =$ _____
12. $56 \div 7 =$ _____
13. $234 + 456 =$ _____
14. $1\ 024 - 25 \times 2 =$ _____
15. $12\ 567 + 24\ 433 =$ _____
16. $550 \times 1\ 100 =$ _____
17. $625 \div 25 =$ _____
18. $833 + 67 \times 100 =$ _____
19. $1\ 200 + (800 - 200) =$ _____
20. $525 \times 4 \div 4 =$ _____
21. $124 - 6 - 2 =$ _____
22. $119 + 12 + 9 =$ _____
23. $17 + 14 + 1 =$ _____
24. $36 \div 12 =$ _____
25. $49 \div 7 =$ _____
26. $89 \times 2 =$ _____
27. $1\ 000 \times 10 =$ _____
28. $28 \div$ _____ $= 14$
29. $63 \div$ _____ $= 7$
30. $500 \div 2 =$ _____
31. $1\ 000 \div 2 =$ _____
32. $1\ 250 + 1\ 250 =$ _____
33. $\frac{1}{2} + \frac{1}{4} =$ _____
34. $131 - 19 =$ _____
35. $\frac{5}{8} + \frac{3}{8} =$ _____
36. $27 + 113 =$ _____
37. $13 + 12 + 35 =$ _____
38. $77 = 47 +$ _____
39. $44 = 14 +$ _____
40. $13 = 93 -$ _____
41. $150 \times 3 =$ _____
42. $40 \times 8 =$ _____

Answers: 1. 4 351; 2. 2; 3. 9 990 102; 4. 235 500 000; 5. 50; 6. 2 710 000; 7. 9 200; 8. 0; 9. 44 823 111; 10. 29 450; 11. 35; 12. 8; 13. 690; 14. 974; 15. 37 000; 16. 605 000; 17. 25; 18. 7 533; 19. 1 800; 20. 525; 21. 116; 22. 140; 23. 32; 24. 3; 25. 7; 26. 178; 27. 10 000; 28. 2; 29. 9; 30. 250; 31. 500; 32. 2 500; 33. $\frac{3}{8}$; 34. 112; 35. 1; 36. 140; 37. 60; 38. 30; 39. 30; 40. 80; 41. 450; 42. 320

SOLVE EACH PROBLEM.

1. Divide R400 in the ratio 2:3

2. A man earns R80 per hour. How much does he earn in $2\frac{3}{4}$ hours?

3. John saves 20% of his pocket money. How much does he save if he receives R80 pocket money?

4. If 27 kg tomatoes cost R135, how much will 20 kg tomatoes cost?

5. A company donated containers with tennis balls to 52 schools. In each container there are 345 balls. How many balls were donated?

6. Peter wants to buy a television that costs R4 500. He has already saved R3 800. How much more money does he need?








7. Mrs Manga bought 42 shirts for her workers. Each shirt costs R120. How much did she pay altogether?

8. Mrs Jansen uses 2 cups of self-raising flour to bake 24 cupcakes. How much self-raising flour would she use if she wanted to bake 6 cupcakes?

9. When Gary gives his small dog 1 biscuit, he gives his big dog 2 biscuits.
a. If his small dog gets 3 biscuits, how many will his big dog get?

- b. If his big dog gets 12 biscuits, how many biscuits will his small dog get?

10. Gary gives the dogs 21 biscuits. How many biscuits will his small dog get and how many biscuits will his big dog get?

11. Which square is the same as the one to the right?

(A)  (B)  (C)  (D)  (E) 
12. If we place dice side by side in a row on a table, only some of the faces are visible:
With 2 dice in the row 8 faces are visible; with 3 dice in the row 11 faces are visible, etc. If 75 dice are placed in a row, how many faces will be visible?

(A) 75 (B) 227 (C) 225 (D) 300 (E) 275

Answers: 1. 160:240; 2. R220; 3. R16; 4. R100; 5. 17 940; 6. R700; 7. R5 040; 8. 2/4 or 1/2; 9a. 6; 9b. 6; 10. small = 7; big = 14; 11. B; 12. B

SPEAK UP!

Should school uniforms be compulsory? Should every home have a pet? Should children under 14 be allowed on Facebook? These are just a few of the interesting topics you might discuss in a debate. But what is a debate and why should you take part?

A debate is a formal way of sharing your thoughts and ideas on specific topics. Two teams get the opportunity to have arguments FOR and AGAINST a motion. Every team has three speakers and together they have to convince the audience and judges that they are right.

Debating is a fun way to learn about the world around you and it will teach you valuable lessons as you grow up. Many good debaters started where you are now. If you work hard and try your best, you could become a great debater too!

WORDS TO REMEMBER

PROPOSITION

This team has to agree with the topic of the debate and argue FOR IT.

OPPOSITION

This team has to disagree with the topic and argue AGAINST IT.

MOTION

The motion refers to the topic of the debate. Motions can start with the words: "This house believes that..." or "This house would..." followed by the argument.

REPLY SPEECH

Once every team member from both teams has

delivered their argument, a speaker from each team (usually the first or second speaker) will deliver a summary of the most important points. This closes the team's arguments.

POINT OF INFORMATION (POI)

You get the opportunity to interrupt the speaker and challenge his/her argument.

REBUTTAL

A reply that intends to question the opposing team's argument.

TIMING

Each speaker gets 5 minutes. The rebuttal is only 3 minutes long.

PREPARE FOR YOUR FIRST DEBATE



Speaking in front of a big audience and judges might seem scary and intimidating at first. That's completely normal! Even the world's best debaters didn't sound like professionals when they started. Winning a debate is not the main goal. It's more important that you learn and understand the world around you. Follow these tips to build confidence before your first debate:

1. Be like a sponge and absorb everything you can about your topic. The internet is a good place to start. But don't stop there. Read magazines and newspapers. Speak to people about the topic.
2. Make sure every speaker on your team understands the topic in the same way. Your argument will come across more clear and united.
3. Practise your speech in front of your team, your family and even the mirror! When you know what you are going to say, you'll say it with more confidence.
4. Make sure the order of your arguments makes sense. A debate is almost like telling a story – it has a beginning, middle and end.
5. Winning isn't everything. Whether you win or lose your first debate, give yourself a high five because you did it! Chat with the opposing team afterwards. You might learn a thing or two and even make a new friend!

ADD FLAVOUR TO YOUR STORY

Have you ever heard someone talk about a 'bittersweet experience' and thought 'how can something be bitter and sweet too'? Or how can your neighbour's dog be pretty ugly? These descriptive phrases are called oxymorons.

An oxymoron is a figure of speech made of two or more words that have opposite meanings. Combined they form a juxtaposition, which means they create an interesting contrast. Let's look at an example: jumbo shrimp.

jumbo = big
shrimp = small

We use oxymorons for different reasons. For example, you can add drama to your description by saying your supper was 'disgustingly delicious'. It sounds more interesting than 'really good'!

In your creative writing, an oxymoron can also be used to make your reader laugh or think twice about what you're saying.

FUN FACT: The word 'oxymoron' is actually an oxymoron! It is derived from Greek – oxys means 'sharp' and moros means 'foolish'.

CAN YOU IDENTIFY THE OXYMORON?

Underline the oxymoron in each sentence below.

1. Pumsa has a love hate relationship with science.
2. Our teacher is seriously funny.
3. The Winter's Tale from Shakespeare is the perfect example of a tragic comedy.
4. Having polony for lunch is your only choice.
5. The gossip is old news.
6. Stop being such a big baby!
7. It's an open secret that Cliff likes Jemma.
8. Your birthday cake was awfully good.

Answers: 1. love hate; 2. seriously funny; 3. tragic comedy; 4. only choice; 5. old news; 6. big baby; 7. open secret; 8. awfully good

KNOW YOUR NOUNS

A collective noun refers to a group. Underline the collective noun in each sentence below.

1. A flock of swallows flew over my house.
2. Mom asked me to buy a loaf of bread.
3. We watched a group of dancers perform.
4. The troops returned from the battlefield.
5. We were lucky to see a pride of lions sleeping under the trees.

Answers: 1. flock of swallows; 2. loaf of bread; 3. group of dancers; 4. troops; 5. pride of lions

PAST TENSE VERBS

A past tense verb tells an action that has already happened. Complete each sentence below with the past tense form of the verb in parenthesis.

1. He _____ on his bed. (jump)
2. She _____ in front of the class. (speak)
3. Grandpa _____ his book. (read)
4. The president _____ his speech in front of parliament. (give)
5. The girls _____ to the shops. (walk)

Answers: 1. jumped; 2. spoke; 3. read; 4. gave; 5. walked

All-time Favourites



Reading is a fun way to improve various skills, such as logical thinking and problem solving. The more you read, the more you learn and that's how you grow smarter! These books are loved by children around the world.

HARRY POTTER

By JK Rowling

Harry Potter is a series of fantasy novels that tells the story of a young wizard and his friends who attend Hogwarts School of Witchcraft and Wizardry. In between developing their magic skills and playing Quidditch (similar to hockey, but played on broomsticks), they have to fight trolls, Death Eaters and the biggest villain of all – Lord Voldemort who murdered Harry's parents. Expect many twists and turns!

A SERIES OF UNFORTUNATE EVENTS

By Lemony Snicket

Violet, Klaus and Sunny Baudelaire are left orphaned after a mysterious fire burns down their house. The children

are sent to live with a distant cousin, the evil Count Olaf, who tries to steal their inheritance. The series of 13 books is filled with black humour, strange characters and wicked adventures.

WRINKLE IN TIME

By Madeleine L'Engle

Meg and her little brother, Charles, embark on a dangerous journey to save their scientist father from evil forces. They travel through space and time to a new planet with the help of three strange astral travellers known as Mrs Whatsit, Mrs Who and Mrs Which.

MATILDA

By Roald Dahl

This is the unforgettable tale of Matilda, a gifted girl with horrible parents and a terrifying principal. When she discovers that she has the power of telekinesis – the ability to move objects by using the power of her brain – she starts to fight back.



MAKE YOUR MONEY GROW



Have you heard the saying 'money doesn't grow on trees'? It means that you only have a limited amount of money that you can spend on the things you want.

Like sweets and sneakers! While this saying rings true, there are ways you can make your money 'grow'. Here are a few ideas:

Work in your neighbour's garden

Does the garden next door resemble a jungle? Offer to mow the lawn or rake the leaves. Make sure all pets are safely tucked away in the house before you start mowing. Ask if you can use your neighbour's gardening tools.

Become a dog walker

Just like humans, dogs need daily exercise too. Their owners often don't have the time to give their pets the attention they deserve. If your parents don't want you to walk alone, ask an older

sibling to accompany you. Make sure you know the dog's name before you leave the house!

Paint nails

Can you paint nails neatly and nicely? Offer your services to your mom's friends or your aunts and grandma! You can get creative and paint watermelon nails or leopard spots.

Sell lemonade

Nothing beats a cold glass of lemonade on a hot summer's day. Set up a lemonade stand in front of your house and sell your refreshing beverage to neighbours.

Grow and sell vegetables

Why would your neighbour go to the shops for tomatoes if she can buy them next door? Plant a few vegetables in a container or your garden and sell the produce to your neighbours.

Did you see an idea you like? South Africa needs entrepreneurs like you! An entrepreneur is a person who sets up a business and makes money from it.

Entrepreneurs also give jobs to people, which helps to grow our economy. Good luck with your new business!

Business basics

1. Always be friendly to your customers.
2. Charge a fair price for your service.
3. Advertise in your community.

Source: [wikihow.com](http://www.wikihow.com)



NOUNS, VERBS & ADJECTIVES

A **noun** is a word that names a person, place or thing. For example, 'cat' and 'mountain'.

A **verb** is a word or phrase that describes an action. For example, 'run' and 'write'.

An **adjective** is a word that describes a noun. For example, 'quick' and 'boring'.

See if you can identify whether the words below are nouns, verbs or adjectives. Write your answer in the space provided.

1. dance _____
2. flower _____
3. beautiful _____
4. unconscious _____
5. motivating _____
6. Cape Town _____
7. look _____
8. arm _____
9. drive _____
10. lake _____

Answers: 1. Verb, 2. Noun, 3. Adjective, 4. Adjective, 5. Adjective, 6. Noun, 7. Verb, 8. Noun, 9. Verb, 10. Noun

DO YOU KNOW THESE IDIOMS?

Connect the idiom with the correct meaning:

- | | |
|-----------------------------|-------------------------------------|
| 1. A dime a dozen | A. Stop working on something |
| 2. Call it a day | B. Give away a secret |
| 3. Easy does it | C. Sick |
| 4. Make a long story short | D. A big fuss about a small problem |
| 5. Under the weather | E. Stop discussing an issue |
| 6. Go on a wild goose chase | F. Do a good job |
| 7. Spill the beans | G. Something common |
| 8. A storm in a teacup | H. Tell something briefly |
| 9. Cut the mustard | I. To do something pointless |
| 10. Let sleeping dogs lie | J. Slow down |

Answers: 1. G, 2. A, 3. J, 4. H, 5. C, 6. I, 7. B, 8. D, 9. F, 10. E

DO YOU KNOW WHAT THESE WORDS MEAN?

hypothesis
adulation
furniture
chauffeur
menagerie
souvenir
allergy
inflorescence
repartee
changeable
aerodynamics
memorabilia
amalgamate
orphanage
championship
fortification
allegiance
remittance
characteristic
altruism

persevere
infomercial
ambivalent
endorsement
gymnasium
aggressive
endeavour
fungicide
individualism
chicanery
turbulence
advocate
mediterranean
inconvenience
perennial
emulsify
centipede
fugitive
aeronautics
merest

enigmatic
incongruous
bureaucracy
chameleon
encyclopaedia
slumber
fundamental
alliteration
liquorice
cessation
endure
dreadful
oxymoron
aluminium
incoherent
ostentation
ambience
enclose
chirrup
amateur

sovereign
trousseau
encircle
incorporate
skirmish
renaissance
frenetic
centennial
incinerate
melodramatic
formidable
remnant
perpetrate
emphasise
vulnerable
chaperone
recuperate
ordinarily
nourishment
trapezium

orchestra
meticulous
perpetuate
frequent
perforation
nutritious
indigenous
perspective
mercury
encounter
choreograph
reminisce
dutifully
redemption
enjambment
fortuitous
guarantee
tuberculosis
recusant
tortoise

sincere
mediocrity
reincarnation
permissible
incessant
tribulation
indomitable
pernicious
infectious
melancholy
thesaurus
solitaire
knuckle
transgress
listeriosis
nuisance
transparent
shriek
regurgitate
traumatise

sorghum
meteorologist
tournament
relinquish
tranquil
opulent
loincloth
somniaambulism
thyroid
repercussion
permeate
slippery
overturn
luxuriant
sesquicentenary
perplex
solemn
thorough
sordid

WORD PUZZLE

Find the following words hidden in the squares. The words may be found left to right, back to front, upside down or diagonally across.

J	E	B	D	U	N	H	B	H	A	L	A	Y	N
I	N	F	I	R	O	I	K	T	B	J	G	G	H
M	I	E	H	R	M	P	L	Q	B	A	P	E	A
P	P	F	N	K	O	P	I	C	G	C	S	L	T
A	U	F	O	K	N	O	P	Z	S	K	B	E	E
L	C	A	O	R	G	P	S	V	E	A	Z	P	E
A	R	R	B	A	O	O	P	K	N	L	Q	H	H
V	O	I	A	V	O	T	R	J	Q	K	W	A	C
G	P	G	B	D	S	A	I	V	U	K	X	N	G
L	T	B	N	R	E	M	N	K	A	N	X	T	G
Q	Y	X	T	A	R	U	G	A	M	O	U	D	H
E	S	O	M	A	G	S	E	M	M	Q	E	H	R
V	H	W	I	M	U	G	R	V	Y	B	Z	P	D
Q	N	Z	M	G	P	P	G	Z	V	I	X	S	L

Aardvark
Baboon
Cheetah
Elephant

Giraffe
Hippopotamus
Impala
Jackal

Klipspringer
Mongoose
Nyala
Porcupine

ANIMAL IDIOMS

Match the idiom on the left with its meaning on the right.

- | | |
|----------------------------------|---|
| 1. Ants in your pants | A. The biggest part or portion of something |
| 2. Get the lion's share | B. Get two things done at once |
| 3. Hold your horses | C. Money saved for the future |
| 4. An eager beaver | D. In trouble with another person |
| 5. In the dog house | E. Go straight for something |
| 6. Kill two birds with one stone | F. Wait a moment |
| 7. Make a beeline | G. In competition for power |
| 8. A nest egg | H. Someone who is excited about doing something |
| 9. The rat race | I. A message directly from the original source |
| 10. From the horse's mouth | J. Unable to sit down |

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

WHEN I GROW UP...

Not too long ago, we lived in a world without cell phones and the internet. No Google maps or online dictionaries. Can you imagine that?! Many useful tools that form part of our daily lives didn't even exist 15 years ago. The jobs we know today will look very different by the time you finish school. By 2025, machines will take over 5 million jobs. But there's no need to worry! Your future job will likely be more exciting than past careers. Machines will handle all the menial jobs, so humans can focus on finding innovative solutions to complex problems, like pollution.

7 ESSENTIAL SKILLS

1. Problem Solving: You'll need a bendy brain that can think outside the box to solve problems of the future. Fortunately, you can develop this skill with practice. Tackle a variety of challenging problems to stretch your brain.

2. Critical Thinking: Machines will be able to do many jobs that currently exist, but critical thinking won't be part of their skill set. To be a critical thinker, you need to consider solutions and make decisions based on logic and reasoning.

3. Creativity: Robots might beat humans at spotting problems and doing calculations, but

they're not the best at being original. Nurture your creativity and no robot will steal your job!

4. People Skills: When technology takes over the world, it'll be us against the machines! Exceptional people skills will come in handy to manage people and robots. Having empathy, being a good listener and getting in touch with your emotions are crucial.

5. STEAMAC: Proficiency in science, technology, engineering, art, mathematics, agriculture and coding (STEAMAC) will remain sought after in the future. To keep up with technology, you'll have to keep your STEAMAC skills up to date. One way to do this is to learn how to code. And keep learning.

6. Interdisciplinary Knowledge: Future problems need creative solutions. As an innovator, you'll have to use information from various fields to come up with awesome ideas. Practise this skill by reading as much as you can and as wide as you can. Don't just focus on one subject.

7. SMAC: Ever heard of SMAC? The acronym stands for Social, Mobile, Analytics and Cloud. And if you want to stand out in the future job market, it's just as important as STEAMAC.

Essential skills: STEAMAC, problem solving, people skills

Medical Mentor: Before you know it robots will be diagnosing whether you have a bladder infection or appendicitis and performing surgery without missing a beat. Medical mentors will be responsible for the after care, which is just as important! If you can imagine yourself as a personal trainer, dietician, psychologist and friend all in one, this job is for you.

Essential skills: STEAMAC, critical thinking, problem solving, people skills and interdisciplinary knowledge

Personal Productivity Person: Technology enables us to work faster and better, but it can also lead to the opposite – inefficiency. Think about how many distractions you have to fight off during study time – Facebook, Instagram, 24-hour news. As you get older and technology continues to evolve, your distractions will grow! The solution? A personal productivity person who will help people to work smarter and harder without letting distractions get in their way!

Essential skills: Critical thinking, creativity, problem solving, people skills, SMAC and interdisciplinary knowledge

Source: crimsoneducation.org

JOBS OF THE FUTURE

Trash Engineer: Not very glamorous, true, but trash engineers will be crucial to ensure we don't end up living on a garbage dump straight out of Wall-E (watch this movie!). Every year, we produce more trash than we can handle and soon we'll need a trash engineer to solve the world's garbage problems one plastic bottle at a time.
Essential skills: STEAMAC, critical thinking, problem solving

Alternative Energy Consultant: Forget fossil fuels. Solar, wind and hydroelectric power is the future. Alternative energy consultants will be in high demand to advise which energy source is best for the home, city or community.

HOW DO PLANES FLY?

Jump up in the air. What happens? You come back down to earth almost instantly. Throw a ball in the air. The same thing happens. This is because an invisible force called gravity pulls objects toward earth. Otherwise, everything including you would be floating in the air! But how does an aeroplane, weighing almost 600 tonnes, escape the pull of gravity to fly through the clouds above? Four forces – lift, weight, drag and thrust – work together to keep the plane in the air.

During flight, an aeroplane has to overcome two forces: weight and drag. **Weight** is gravity that pulls the aeroplane towards the ground. When the aeroplane is in motion, the wings generate a force called **lift**. The wings push air down, while the air pushes the wings up.

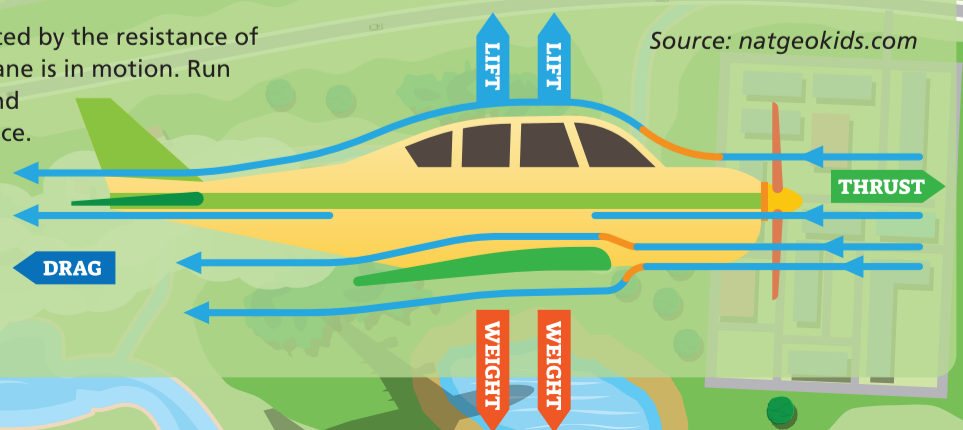
Lift causes the aeroplane to rise into the air and stay there. The force that moves the aeroplane forward is called **thrust**. Propellers or jet engines are responsible for this motion. The Airbus A380 is the world's largest passenger airliner and it needs four engines to generate thrust.

Drag is the force produced by the resistance of the air when the aeroplane is in motion. Run against a strong wind and you will feel the resistance. Drag slows you down. Planes move with ease because they are designed to let the air pass around them with minimal drag.

PROFESSOR THANDI SAYS

Newton's Third Law of Motion is a scientific theory that explains an aeroplane's ability to fly. The law states that 'for every action, there is an equal, but opposite, reaction'.

Source: natgeokids.com



VUYO & GEMMA GO CAMPING

It was a sunny Friday afternoon in Mouseville. Vuyo was busy loading the Cheesemobile with tiny tents and logs for firewood. The quadruplets were beyond excited. They were going on their first camping trip. "Dad! Dad! Are we going to sleep under the stars?" "Can we braai marshmallows?" "Will there be creepy-crawlies?" "Or lake monsters?" Vuyo laughed at the chorus of questions. "You'll have to wait and see!" he answered.

When they arrived at the campsite, they found a comfortable spot underneath the trees and near the lake. The sun made the water sparkle like diamonds. "Let's go for a swim!" Petra shrieked. "Good idea!" her siblings replied in unison. The quadruplets scrambled out of the car. While Vuyo and Gemma were pitching their tents, they could hear squeals of laughter and water splashing. The quadruplets were racing to see who could swim the fastest. No one was competition for Michael. But Emma was hot on his heels. Suddenly, Michael shouted, "Help! The lake monster!" He waved his arms in the air and disappeared under the water. Without thinking

twice, Emma raced towards Michael. Petra and Jonah started swimming in the opposite direction, taking big gulps of water. Emma dived under the water to save her brother. Within a few seconds, they resurfaced. Michael started laughing. "Got you!" he shouted. "What? Where's the lake monster?" Petra cried out from the shore. "There IS no lake monster!" Emma replied with a scowl. Upset that their brother tricked them, they abandoned Michael and the

lake to follow the smell of grilled cheese instead. Again, they heard Michael calling for help, but they ignored his pleas. While Emma, Petra and Jonah shook the water from their furry bodies, Gemma asked: "Where's Michael?" "The scary lake monster caught him," Emma replied with a scoff. Petra and Jonah burst out laughing. But Gemma was worried. She dashed towards the lake. "Mom, he's just pretending!" Jonah called after her. But Michael was nowhere to be seen.

Gemma was about to dive into the water when she noticed a tiny figure sitting on a rock. She breathed a sigh of relief. When she reached Michael tears were streaming down his furry face. "No one came to save me... and I was in trouble! For real this time!" A giant fish mistook his tail for food and pulled him under the water. Lucky for Michael a mouse tail tastes like rubber and the fish was not impressed.

Gemma gave him a hug and said: "Remember, nobody believes liars, even when they speak the truth. So if you want people to trust you, never cry wolf. Or in your case, cry lake monster!"



AN ICY ADVENTURE

Freeze! Are you ready for five brrrrrilliant facts about glaciers? Let's go!

1. Glaciers are massive chunks of ice that form over hundreds of years from fallen snow that doesn't melt. Once enough snow has built up, it compresses and turns into solid ice. Most glaciers are found in the North and South Poles. They also exist in mountain ranges, like the Himalayas in Asia and the Andes in South America.

2. Glaciers might look like stationary heaps of ice, but they are actually moving, albeit at a slow pace. The speed varies from a few metres a year to several metres per day.

3. 75% of Earth's fresh water is stored in glaciers, which makes them the largest reservoir of fresh water in the world!

Source: natgeokids.com

4. During the last ice age, glaciers covered 32% of land on Earth. Today, glaciers cover only 10% of land. This is a result of global warming. Earth is getting warmer, which means there is less snow and ice to form glaciers.

5. Scientists estimate that if the Antarctic ice sheet – the largest single mass of ice on Earth – melts entirely, sea levels would rise by 65 metres and London would be underwater!

LOST IN SPACE

The sky is full of stars and space junk. These earthly objects that orbit our planet include leftovers from space missions, items sent up into space and souvenirs left behind by astronauts. Let's take a closer look at the weird and wonderful things lost in space.

RODDENBERRY'S ASHES

The creator of Star Trek was so passionate about space that he had a portion of his ashes sent into the atmosphere after his death in 1991. The rest of his ashes, along with those of his wife, were launched into space in 2016.

DEAD ANIMALS

Between 1940 and 1960, animal testing extended to space missions. Before astronauts went into space, animals were sent up into the atmosphere to test whether it was safe for humans. Sadly, not all the animals made the journey back home, including Laika, the first dog in space and about 30 monkeys called Albert.

FAMILY PHOTO

On the Apollo 16 mission, astronaut Charles Duke left behind a family portrait of him, his wife and their two sons as he explored the moon's Descartes Highlands. He wrote the following on the back of

the photograph: "This is the family of astronaut Charlie Duke from planet Earth who landed on the moon on April 20, 1972." Do you think he wanted to alert aliens that there is life on Earth?!

PIZZA

Good news for future Martians and lovers of pizza! In 2001, Russian cosmonaut Yuri Usachov ordered a salami pizza from Pizza Hut while on a space mission. At R14 million, this was probably the most expensive takeaway ever! Fortunately, Pizza Hut footed the bill for the privilege of delivering the first pizza in space.

Source: natgeokids.com

REASON FOR THE SEASONS

While it might sometimes feel like we're experiencing four seasons in one day, it's impossible! Our year is divided into spring, summer, autumn and winter with each season lasting three months.

The seasons play an important role on Earth. In **spring**, the weather is warmer. Nature comes alive with new blooms and baby animals.

Summer brings the hottest temperatures of the year. Heatwaves and drought often cause trouble for all living creatures. Crops are usually harvested at the end of summer.

In **autumn**, temperatures start to drop and plant growth slows down. Animals, like ants, prepare for winter by eating large amounts of food. Leaves change colour and deciduous plants, including trees and shrubs, lose their leaves for winter.

Winter is the coldest season and it snows in many places. Animals find ways to stay warm. For example, arctic foxes grow thick coats, bears go into hibernation (which means their metabolism slows down and they don't move much) and swallows migrate to warmer weather.

But what causes the seasons to change? It all comes down to the Earth's changing relationship to the Sun. Every 365 days, the Earth travels around the

Sun. This is called an orbit. Every day, as the Earth moves around the Sun, your location will get a little more or less sunshine, depending on the time of year. This change is the reason for our seasons.

Did you know the Earth is slightly tilted? This means that when it rotates on its axis every 24 hours, it doesn't move in a straight up or down manner relative to the Sun. This tilt affects the Sun's angle to the Earth and the length of our days. This is why seasons north of the Equator are the opposite of seasons south of the Equator. For instance, your pen pal in France will be playing in the snow during Christmas, while you're enjoying a day at the beach!

Source: ducksters.com

QUIZ TIME

1. How often does the Earth orbit the Sun?
2. Which pole is pointed to the sun when the northern hemisphere is experiencing winter?
3. Are the nights longer during the summer or winter?
4. During which season do most plants begin to grow and animals have their babies?

Answers: 1. Every 365 days; 2. South Pole; 3. Winter; 4. Spring

MAKE A THUNDERSTORM

Let's further explore the weather with this fun experiment.

YOU WILL NEED

- A clear, rectangular plastic container
- Red food colouring
- Ice cubes made with blue food colouring

INSTRUCTIONS

1. Fill the plastic container two-thirds full with lukewarm water.
2. Let the water sit for one minute.
3. Place a blue ice cube at one end of the plastic container.
4. Add three drops of red food colouring to the water at the opposite end of the plastic container.
5. See what happens.

RESULTS

The blue and cold water sinks while the red and warm water rises. This happens because of convection. The blue water represents the cold air mass and the red water represents the warm, unstable air mass.

A thunderstorm is caused by unstable air and convection plays an important part. A body of warm air is forced to rise by an approaching cold front and that is how thunderstorms form.

Source: weatherwizkids.com

GENERAL KNOWLEDGE

1. In which country is the tallest waterfalls in the world?

2. Which food will never spoil?

3. What is the outer layer of your skin called?

4. What is the biggest part of the brain called?

5. What is the capital city of Afghanistan?

6. What controls how much light passes through the pupil?

7. Which famous physicist wrote "A Brief History of Time"?

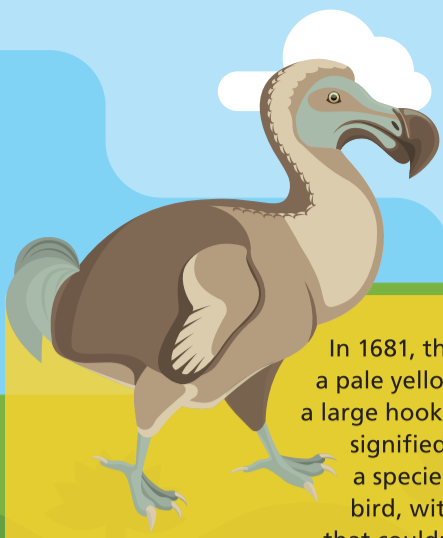
8. What is the unit of energy referred to in the equation $E=mc^2$?

9. What is the standard unit of distance in the metric system?

10. What is the official language of Brazil?

Answers: 1. Venezuela, 2. Honey, 3. Epidermis, 4. Cerebrum, 5. Kabul, 6. Iris, 7. Stephen Hawking, 8. Joules, 9. Kilometres, 10. Portuguese

DODO WHO?



In 1681, the death of a pale yellow bird with a large hooked beak signified the end of a species. The dodo bird, with tiny wings that couldn't fly, lived peacefully on the island of Mauritius. That is until the arrival of the Portuguese explorers in the 1500s. Along with their pigs, monkeys and rats, they wiped out these flightless birds within 100 years. The dodo stood no chance against the human invasion.

About 8.7 million species live on earth. Experts calculate that up to 8 700 species become extinct every year. When an animal becomes extinct, it means there is not a single one of the species left on earth. Wowzers! What causes animals to disappear off the face of the earth?

NATURAL FORCES

Forces of nature can destroy species in more ways than one. Climate change, a reduced food supply and animals that compete for food and habitat can lead to their demise. Although this usually happens over a long period of time, mass extinctions do happen.

The most famous example is the extinction of the dinosaurs. Scientists are still baffled by the disappearance of these prehistoric creatures that roamed the earth more than

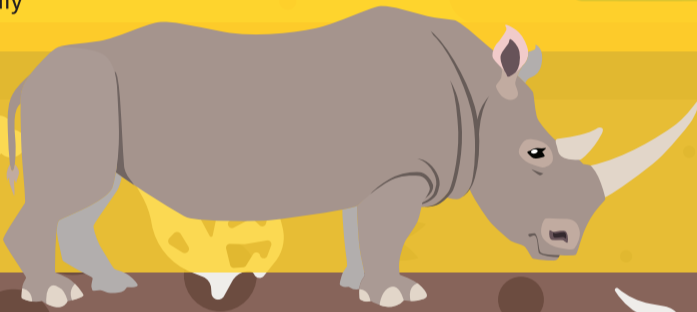
5 500 years ago. Some believe a large meteorite struck the earth, while others suggest it was a massive volcanic eruption.

HUMAN INTERACTION

While extinction is normal in nature, human influence has increased the rate of extinctions far beyond what is considered natural. This affects the planet's biodiversity – the variety of animals and plants on earth – and has a negative effect on all living organisms.

HUNTING

Before the Europeans arrived in North America in the 1600s, thundering herds of bison dominated the landscape. There were at least 30 million of these American buffaloes. But by 1890, their population had dwindled to just over 1 000 as a result of hunting. Fortunately, the bison is no longer endangered. Sadly, the quagga wasn't so lucky. A South African native and subspecies of the zebra, the quagga was known for its unique stripes. Hunters and farmers brought the animal to extinction by the late 1800s.



POACHING

Animals are not only hunted for food. Poachers – people who hunt illegally – kill animals for specific body parts like their horns or fur. In just ten years, more than 7 000 African rhinos have been lost to poaching.

LOSS OF HABITAT

As humans invade the natural habitats of millions of species for land to grow food, they damage the delicate cycle of life that is necessary for organisms to survive.

POLLUTION

Pollution in the ocean, rivers and lakes cause species to die off. When one species is affected, it causes a chain reaction that destroys the balance of the ecosystem.



PROFESSOR THANDI SAYS

Endangered species are at risk of becoming extinct. This means if we don't do something to protect these animals, they might not be around for much longer. In South Africa, we have several animals on the brink of extinction, including the cheetah, Cape vulture and African wild dog.

ANYONE HUNGRY?

These eight dishes from around the world are weird and wacky. Are you brave enough to taste them?

BIRD'S NEST SOUP - CHINA

You might not think a bird's nest is edible, but the Chinese do! They use the nests of swifts to make this delicacy. If you're thinking of leaves and twigs, think again. Swifts make their nests predominantly from saliva.



FRIED TARANTULAS - CAMBODIA

If you suffer from arachnophobia or fear of spiders, you might want to skip this dish. Big, black and hairy, these eight-legged monsters are fried whole with a bit of salt and garlic. Apparently, they taste crispy on the outside and gooey on the inside. Yum!

PUFFER FISH - JAPAN

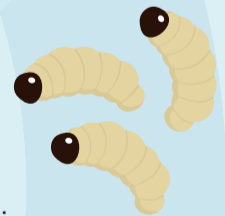
Be careful with this delicacy or it could be your last meal. The puffer fish is deadly because its skin and insides contain tetrodotoxin – a poison that is 1 200 times stronger than cyanide. Chefs have to train for two years before they are allowed to prepare this dish.

FERTILISED EGGS - THE PHILIPPINES

In the Philippines, Balut is as popular as boerewors in South Africa. These fertilised eggs are like the eggs you know, but with an added surprise of having a beak, claws, bones and feathers along with the yolk. Boiled just before they're due to hatch, this delicacy is best enjoyed with a pinch of salt, lemon juice, black pepper and coriander.

MAGGOT CHEESE - SARDINIA

Italy is not only famous for its pizza. Maggot cheese, as the name suggests, is riddled with insect larvae. For health reasons, the cheese has to be eaten when the maggots are still alive. Otherwise, they are considered toxic. Fortunately, this cheese is not a popular pizza topping!



LIVE OCTOPUS - KOREA

Are you up for a serious challenge? Try eating a live octopus with tentacles that stick to any surface they touch! If you manage to get the octopus in your mouth, it will fight for its life by suctioning to your teeth, the roof of your mouth and your tongue. Locals call it a 'party in your mouth'. We call it 'brave'!



Source: bootsnall.com

PROFESSOR THANDI'S FUN SCIENCE EXPERIMENT

HOW TO MAKE FAKE SNOT

There is no need to create the real deal to gross out your friends. Follow the instructions below to create fake snot instead!

YOU WILL NEED

- Boiling water
- A cup
- Gelatine
- Corn syrup
- A fork
- A teaspoon

INSTRUCTIONS

1. Add 125 ml of boiling water to your cup. Be careful!
2. Add 3 teaspoons of gelatine. Wait for the gelatine to soften.

3. Stir the mixture with a fork.
4. Add 62,5 ml of corn syrup to the cup.
5. Stir the mixture with your fork. Long strands of gunk should be forming.
6. Allow the mixture to cool down, adding small amounts of water at a time.

RESULTS

Real snot or mucus is a combination of sugars and protein. Although this mixture is not the same as the real thing, it's also made up of sugar (corn syrup) and protein (gelatine).

The long strands of gunk you see when you stir your fake snot around are protein strands. These strands are responsible for the stickiness and stretchiness of snot. Eeeuw!

Source: sciencekids.co.nz



THE A-TEAM

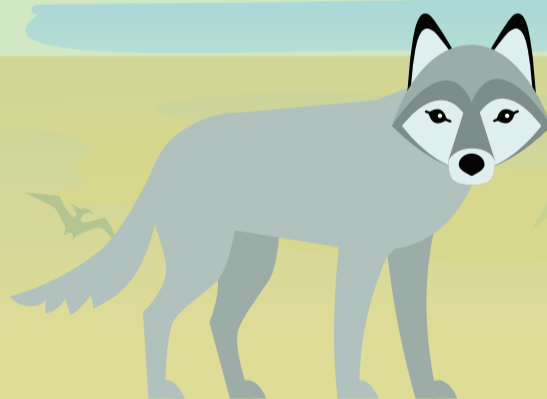
When you play soccer or hockey with your friends, you have to work together as a team to score a goal. Teamwork is also important in other areas of your life. For example, when you have to organise the school dance or complete a science project in a group. We can learn a lot about teamwork from the animal kingdom. Let's take a look at the best team players in the wild.

MEERKATS

Small yet meaty, the meerkat is a popular snack for hungry predators that roam the African plains. To ensure their survival, one meerkat acts as a guard while the rest of the clan tucks into dinner. As soon as the guard spots danger, he alerts them. This alert can be the difference between life and death, so **trust** in the guard is vital.

WOLVES

Excellent communicators, wolves pay close attention to every howl and eye movement made by their furry fellows. They



are so in tune with each other, they even notice small changes in behaviour. Misunderstandings are rare. From the wolves, we can learn that good **communication** leads to better teamwork.

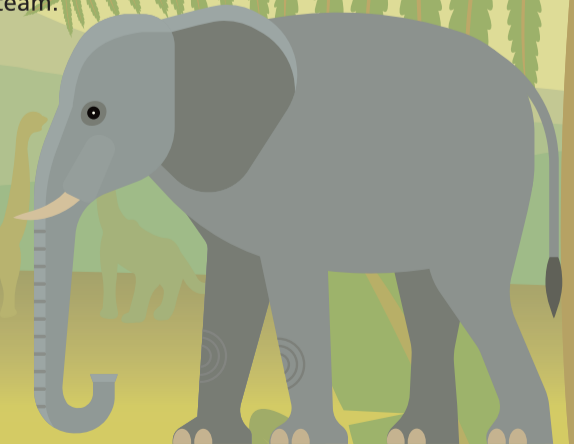
KILLER WHALES

As the ocean's most deadliest predators, killer whales depend on teamwork to catch their prey. By **coordinating** their efforts, they can hunt whales double their size without ending up on the shore, which often happens to their counterparts.



ELEPHANTS

Social and intelligent, elephants can teach us a thing or two about **empathy**, which is the ability to put yourself in someone else's shoes. When an elephant is sick or injured, the herd stays by its side. And if an elephant dies, the entire herd mourns for days. By making an effort to understand your teammate's joys and sorrows, you will form a stronger bond and make a better team.



"If you want to go fast, go alone. If you want to go far, go together." African proverb

Source: entrepreneur.com