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HOW TO PLAN FOR SUCCESS 6

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NOVATION: BUG REPELLENT COATING

Primarily during takeoff and landing, a plane's exterior accumulates bugs and bug

NASA have worked to develop a special coating that decreases the number of bugs and

nv. In December 2021 it was launched on an Ariane 5 Launch

c. Scan the QR Code to view a 3D model of the James Webb Space Telescope

Test your knowledge by matching the labels to the diagram!

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uices. This can lead to increased drag, lowering fuel efficiency! Researchers fro

AND UNLOCK YOUR FULL POTENTIAL

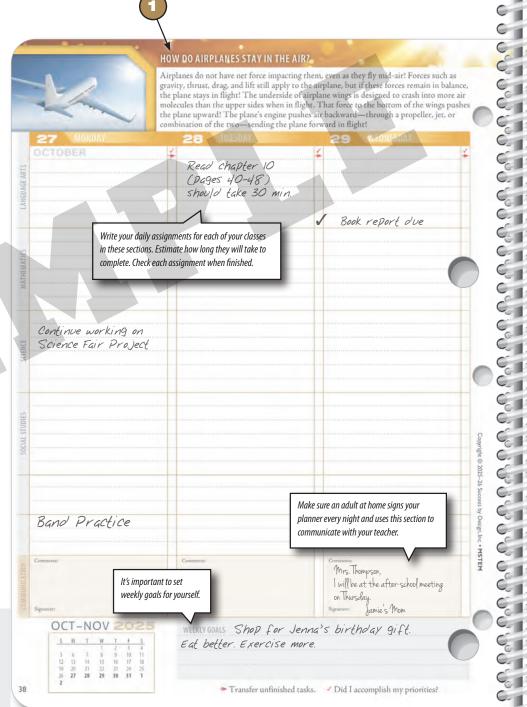
Use the **big calendar** before each month to help you remember special days at school or home. Read about the STEM-related topic of the month. Doing so will introduce you to the types of questions that will be answered for you throughout the month, along with the STEMazing facts with which you will

ADVANCE YOUR POSSIBILITIES THROUGH

Most of the time we take for granted all we have because of STEM—science, technology, engineering, and math. As a matter of fact, you might find it surprising where we would be without them! Just imagine a world with no computers, smartphones, medicines to make you feel better when you are sick, or even numbers!

The many features of our STEM Student Planners are meant to enhance your understanding of the growing importance of science, technology, engineering, and math not only in our world but in your own life, too. Today it's more necessary than ever to increase your knowledge about these four subjects. In doing so, you will open doors that advance what is possible for your future.

> Find help with subjects like English, Math, and Science on the extra resource pages found in the back of your planner!



All information presented throughout this planner was current and accurate at the time of publicatio

In addition to making you more knowledgeable about science, technology, engineering, and math, your STEM Student PlannerTM will be a valuable tool in keeping you organized and on track to unlock your full potential. Whether you're a student or working professional, efficient time management is vital to achieving both today's goals and lifelong success. Start by recording your daily, intermediate, and long-term tasks. Segment major projects, and prioritize each step. Be sure to tackle the most challenging task first. These two pages have been designed as a guide to the intended use of your STEM Student Planner.

OSPACE ENGINEER

2 pm - Jenna's

birthday party

at Grandma's

5 pm - Dinner

WHILE UTILIZING YOUR PLANNER.

you will notice it focuses on a different STEM-related topic each month. During each week of the month, the various sections listed below will teach you more about careers pertaining to the featured topic:



OUESTION OF THE WEEK

Science, technology, engineering, and math are key to unraveling many of life's mysteries. In this section, you will find an answer to a question related to the STEM innovation and a career being featured each week.



INNOVATION

Nearly every innovation throughout the course of history owes itself to science, technology, engineering, or math—or, more likely, a combination of the four. In this section, we describe an innovation that has already had a significant impact on society or is likely to do so in the future.



STEM DESIGNATION(S)

Here we list for you the STEM subjects science, technology, engineering, and math that are most closely related to the question, innovation, and career of the week. While this may sometimes be just one of the four, in many cases you will find they overlap. In such cases, several are listed.



CAREER / JOB DESCRIPTION

Careers in STEM are vital to our future. Each week we focus on one you might find interesting and perhaps even one day want to pursue.



TO LEARN MORE ABOUT **BECOMING A..., VISIT**

Here you are given a website you may visit to learn more about the career of the week. All sites were active when your planner was printed.



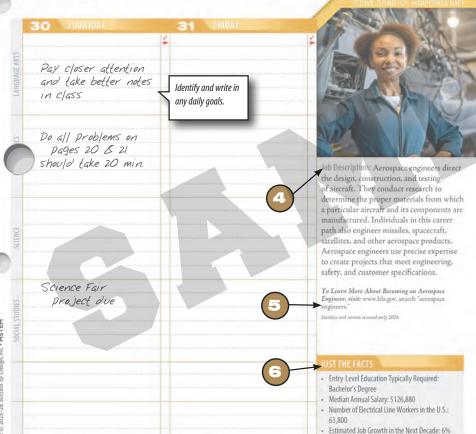
JUST THE FACTS:

This section provides statistical information on the featured career.



AN INTERESTING NOTE

This intriguing and sometimes surprising fact relates to the featured career. A QR code quickly takes readers to the source of the Interesting Note. These sources contain images, graphics, charts, activities, and other interactive features.



ART

\ärt\, noun

something that is created with imagination and skill and that is beautiful or that expresses important ideas or feelings



Art is all around us! The way we experience objects, locations, products, and services is rooted in art. The chairs on which we sit, the smartphones in our hands, and the buildings we spend time inside would not exist without the art-influenced creativity of designers. Art is in the talents of songwriters and musicians who craft songs we enjoy; it's in the direction and acting that brings movies and TV shows to life; and it's evident in every leap and turn of a ballet dancer's routine.

Many STEM careers revolve around art. Jewelers create wearable works of art for people in the form of necklaces, rings, and bracelets. Medical illustrators create visual representations of how the body functions to better educate the public and assist in court proceedings. Recreational therapists use arts and crafts to help those coping with mental, emotional, and physical problems express themselves and heal.

Are you an artistic person? Do you enjoy being creative? Do you like coming up with new ideas to fulfill everyday needs? Maybe a STEM career focusing on art is in your future!

DID YOU KNOW?

August is American Artist Appreciation Month. Regardless of the medium they use, artists enrich our lives through their creative design talents in many ways. The work they create evokes emotion, enhances daily life, entertains, or fulfills practical needs. Take time to look around and appreciate how much of what you see was crafted by the mind of an artist.

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10	MONTHLY GOALS & LO	DNG-TERM ASSIGNMENTS			

SOURCES:

31

merriam-webster.com innovationtoolbox.com.au searchsoa.techtarget.com businessdictionary.com creativityatwork.com

SUNDAY

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MONDAY

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HOW DO ARCHES STAY UP?

These elegant structures not only stay in place, but withstand tremendous pressure. This is possible due to the arch's semicircle structure that distributes compression throughout the structure and then diverts weight and force outward to minimize the tension underneath. Modern, strong, construction materials also assist in the ability to expand arches farther and

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➤ Transfer unfinished tasks. ✓ Did I accomplish my priorities?

INNOVATION: HANDHELD LASER DISTANCE METER

24 THURSDAY

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AN INTERESTING NOTE...

medal winner. Scan the QR code to see the stadium.

From 1912 to 1948 architecture (along with other arts) was considered an Olympic sport. All entries had to make a connection between art and athletics.

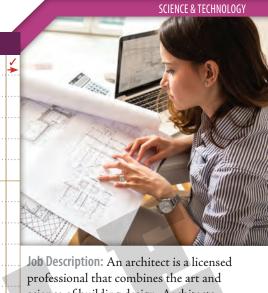
The town planning project "Building Plan of a Modern Stadium" was the first gold

Architecture requires creativity, accuracy and careful planning. In order to ensure that the measurements are precise and fast, a laser distance meter is a handy tool. These handheld measurement tools provide smart volume and area calculations based on length, width and height, all measured by a laser.

25 FRIDAY

AUGUST

CAREER: **ARCHITECT**



science of building design. Architects not only design the aesthetics of a building, but more importantly, they design the structures to building codes, safety standards, and the purpose for the building's usage. An understanding of electrical and plumbing design, and HVAC are critical to this work.

To Learn More About Becoming an Architect, visit: www.bls.gov, search "architect."

Statistics and content accessed early 2024.

JUST THE FACTS

- Entry-Level Education Typically Required: Bachelor's Degree
- Median Annual Salary: \$82,840
- Number of Architects in the U.S.: 123,700
- Estimated Job Growth in the Next Decade: 5%

26 SATURDAY

27 SUNDAY

(See page 122 for QR Code website references.)

DEVELOPMENT

\di-ve-ləp-ment, de-\, noun

1. the state of being developed: 2. the act or process of growing, progressing, or developing: 3. developed tract of land



The degree to which a country has been developed significantly impacts its people. In a nation with a sturdy economy and advanced infrastructure, residents can lead longer and healthier lives, be educated, access resources needed for a decent standard of living, and participate fully in their communities.

STEM-related careers play a critical role in economy and infrastructure. From welders who help keep metal structures intact, to railroad workers who ensure train passengers and freight move smoothly from destination to destination, the progress of a town, city, or nation cannot occur without professionals from various fields of study working together and utilizing the latest technologies.

Progress enables fully developed nations like the United States, Canada, Greece, and the United Kingdom to handle ever-growing populations, and it also aids lesser developed areas such as Bangladesh, Ethiopia, and Haiti in raising their standards of living.

DID YOU KNOW?

Labor Day originated in Canada. It stemmed from 1870s labor disputes in Toronto. A parade was held in 1872 in support of a strike against the then 58-hour workweek. The first Labor Day celebration in the U.S. took place in 1882 in New York City's Union Square. It was held to gain support for reducing the average 12-hour workday to 8 hours.

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SOURCES: merriam-webster.com			
thefreedictionary.com huffingtonpost.com hdr.undp.org/en/			
energy.gov bls.gov			

SEPTEMBER

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WHAT IS A REGION?

A region is a basic unit of geography. A region is an area of land that has common features such as language, government, wildlife, religion, ecosystems, and human settlements. There are five main climate regions that areas of the globe fall within: tropical, dry, temperate, continental, and polar.

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➤ Transfer unfinished tasks. ✓ Did I accomplish my priorities?

INNOVATION: DATA VISUALIZATION SOFTWARE:

4 THURSDAY

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Regional planners must consider large amounts of numeric data gathered from censuses, market research, and economic and environmental studies. To make this information clearer, data visualization software is used. This computer software can convert all the data into easy-to-understand visual representations in the form of graphics, charts, and maps.

FRIDAY

REGIONAL PLANNER

SCIENCE, ENGINEERING & MATH

Job Description: Regional planners create short- and long-term plans that determine the best way to develop land to service communities and manage population growth, while maintaining environmental regulations and historic sites. They identify an area's need and then write reports detailing current land use and their recommendations regarding new use of land, such as where to build schools, bridges, parks, and roads. They also help communities manage revitalization efforts.

To Learn More About Becoming a Regional Planner, visit: www.bls.gov, search "urban and regional planners."

Statistics and content accessed early 2024.

JUST THE FACTS

- Entry-Level Education Typically Required: Master's Degree
- Median Annual Salary: \$79,540
- Number of Regional Planners in the U.S.: 44,700
- Estimated Job Growth in the Next Decade: 4%

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AN INTERESTING NOTE...

The time between the 1890s and 1920s saw a rise in an urban-planning movement known as the "City Beautiful" movement. This concept focused on enhancing a city's appearance by incorporating a central city square, parks, and grand boulevards, which by default also made them more livable, orderly, and clean. Scan the QR code to read more and see a past and present aerial view of Chicago (reference the first and forth images).



(See page 122 for QR Code website references.)

SUNDAY

ENERGY

\'e-nər-jë\, noun

1. fundamental entity of nature that is transferred between parts of a system in the production of physical change within the system and usually regarded as the capacity for doing work: 2. usable power (as heat or electricity); also: the resources for producing such power



Today, energy is critical to every aspect of our lives, and that isn't going to change. The U.S. Energy Information Administration predicts that from 2015 to 2040 world energy consumption will increase by 28%. In America alone, energy use is doubling every 20 years. All of this means that we must learn to use energy more wisely and continue exploring clean and renewable options to reduce our dependency on nonrenewable fossil fuels such as coal, oil, and natural gas, which will one day be depleted. Renewable sources include the sun, wind, and water.

STEM professionals, such as energy engineers, electrical line workers, and fuel cell specialists, for example, are vital to the management and conservation of our current energy sources and the development of better, more diverse ones. It takes numerous people working in concert to ensure the energy sector remains strong.

"No single solution can meet our society's future energy needs," states the Union of Concerned Scientists. "The solution instead will come from a family of diverse energy technologies that share a common thread—they do not deplete our natural resources or destroy our environment."

DID YOU KNOW?

Compared to most people elsewhere, Americans use a lot of energy. The United States, with less than 5% of the global population, uses about a quarter of the world's fossil fuel resources—burning up nearly 25% of the coal, 26% of the oil, and 27% of the world's natural gas. Schools instructing kindergarteners through twelfth graders alone spend over \$6 billion on energy use each year. October is National Energy Action Month—a time set aside to urge us to strive toward greater energy security and a healthier environment.

OCTOBER

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bls.gov

12

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merriam-webster.com whitehouse.gov scientificamerican.com needtoknow.nas.edu ecology.com ucsusa.org

SUNDAY

eia.go aceee.

WHAT ARE THE BENEFITS OF USING SOLAR POWER?

Systems using solar power obtain energy from the sun's radiation. Installing solar panels on homes can help reduce electric bills, as well as the reliance on fossil fuels, such as coal, oil, and natural gas, used in traditional energy production. These fuels are in limited supply, whereas the sun is a completely renewable resource. Solar power also provides clean and pure energy, which reduces pollution and takes some of the strain off our environment.

➤ Transfer unfinished tasks. ✓ Did I accomplish my priorities?



INNOVATION: PORTABLE SOLAR PANELS

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Advancements in photovoltaic (PV) technologies have made additional smaller-scale uses possible. About the size of a tablet, portable solar panels can charge personal electronic devices, such as phones, laptops, and GPS trackers. They can be attached to backpacks, collecting solar energy while the wearer walks—ideal for campers

CAREER: SOLAR PHOTOVOLTAIC INSTALLER



- Entry-Level Education Typically Required: High School Diploma or Equivalent
- Median Annual Salary: \$45,230
- Number of Solar Photovoltaic Installers, in the U.S.: 29,400
- Estimated Job Growth in the Next Decade: 22%

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AN INTERESTING NOTE...

In the Sahara Desert, the sun generates over 20 million terawatt hours of energy in a year. That's 100 times more than what we humans use in a year! So why don't we take advantage of this by installing a massive solar farm? Scan the QR code to watch a video and find out!

(See page 122 for QR Code website references.)

SOURCES

ENGLISH

WEBSITE REFERENCES

Abbreviated references for each month may be found on the monthly spreads. References for each career may be found on the weekly spread, in the section *To Learn More About Becoming a ..., Visit:* (website references). For a full list of references for the weekly content, please see the MSTEM product page on our website, www.successbydesign.com.

These references were verified at the time of production, but changes or redirections may occur.

"AN INTERESTING NOTE" OR CODE WEBSITE REFERENCES*

ARCHITECT

QR Code: https://architectureau.com/articles/whenarchitecture-was-an-olympic-sport/

CURATOR
QR Code: https://www.artsy.net/article/artsy-editorial
20-curators-cutting-edge-approach-art-history

MEDICAL ILLUSTRATOR
QR Code: https://www.ami.org/medical-illustration.

RECREATIONAL THERAPIST POLITICAL

QR Code: https://www.sjrp.com/services/recovery therapies/art-therapy/

INTERIOR DESIGNER
QR Code: https://blogs.loc.gov/

learn-about-medical-illustration

headlinesandheroes/2018/07/elsie-de-wolfe/
ART DIRECTOR

QR Code: https://www.canva.com/colors/color-wheel/ REGIONAL PLANNER

QR Code: https://www.britannica.com/topic/City-

WELDER
OR Code: https://www.ifbrennan.com/blog/the-art-of

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CIVIL ENGINEERING TECHNICIAN

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FREIGHT TRAIN CONDUCTOR

QR Code: https://www.aar.org/wp-content/ uploads/2023/06/AAR-Freight-Rail-Climate-Change-Infographic.jpg.webp

SOLAR PHOTOVOLTAIC INSTALLER

QR Code: https://www.youtube.com, watch?v=Wcl lpWmFn08

INSULATOR

QR Code: https://www.youtube.com/

ELECTRICAL LINE WORKER

QR Code: https://www.smartgrid.gov/the_smart_gi

smart_grid.html
MATERIALS SCIENTIST

QR Code: https://www.sciencemag.org/news/2010/01 egyptian-eyeliner-may-have-warded-disease

work help for all grade levels.

AEROSPACE ENGINEER

QR Code: https://g.co/kgs/B9uiGHZ

BUDGET ANALYST

QR Code: https://www.financialfootball.com/play

QR Code: https://text-message.blogs.archives. gov/2015/01/22/fool-thing-to-do-the-true-storyof-surviving-a-fall-into-the-carlsbad-caverns-

national-park-elevator-shaft/ POLITICAL SCIENTIST

QR Code: https://www.youtube.com/ watch?v=OazmVHA00os

INTERNAL AUDITOR

QR Code: https://www.bbc.com/news/ business-41582244

COMPUTER SCIENTIST

QR Code: https://www.dougengelbart.org/content/ view/162/000/

CRYPTOGRAPHER

QR Code: https://www.cnn.com/2020/07/25/us/ kryptos-secret-message-code-trnd/index.html COMPUTER HARDWARE ENGINEER

QR Code: https://www.computerhistory.org/timeline/

IT MANAGER

QR Code: https://www.thelogocreative.co.uk/applelogo-evolution-it-all-started-with-a-fruit/

SOFTWARE DEVELOPER

https://www.nationalgeographic.org/thisday/se worlds-first-computer-bug/

ANTHROPOLOGIST

QR Code: https://www.nbcnews.com/science/sciencenews/dna-links-kennewick-man-skeleton-native american-tribes-n377291

CYTOGENETIC TECHNOLOGIST

QR Code: https://www.pbs.org/kenburns/the-gene/ the-gene-explained/

VETERINARY TECHNICIAN

QR Code: https://www.pdsa.org.uk/what-we-do/blog/10-amazing-facts-about-dogs

MEDICAL SCIENTIST

QR Code: https://www.cdc.gov/smallpox/history/

history.html SHIP ENGINEER

QR Code: https://www.popularmechanics.com/ technology/infrastructure/a24153/ship-propeller-

manufacturing/
WIND TURBINE TECHNICIAN

QR Code: https://eerscmap.usgs.gov/uswtdb/ viewer/#3/37.25/-96.25

TRACTOR-TRAILER TRUCK DRIVER
QR Code: https://www.thetruckersreport.com/facts

about-trucks/
HEAVY VEHICLE TECHNICIAN

QR Code: https://www.youtube.com/watch?v=-

PcpkHT8xaU&t=2s
AGRICULTURAL ENGINEER

jdsucc/ FI AVORIST

QR Code: https://www.pbs.org/video/why-do-we-eatartificial-flavors-wxvffr/

CLINICAL NUTRITIONIST

QR Code: https://www.myplate.gov/resources/graphics/ infographics

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FOOD SAFETY AUDITOR

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shelf-stable-food

PARK RANGER
QR Code: https://www.nps.gov/viis/planyourvisit/

maps.htm
ENVIRONMENTAL ECONOMIST

ENVIRONMENTAL ECONOMIST

QR Code: https://www.worldatlas.com/what-is-acid-

rain html

ZOOLOGIST

QR Code: https://www.worldatlas.com/articles/10famous-zoologists-and-their-contributions.html

CONSERVATION SCIENTIST

QR Code: https://www.cnn.com/2021/04/16/world/ animal-reintroduction-extinct-wild-c2e-hnk-spc intl-scn/index.html

SOIL ENGINEER

QR Code: https://soillife.org/soil-101/soil-nexus/ CHIROPRACTOR

QR Code: https://mayfieldclinic.com/pe-anatspine.htm GENERAL PRACTITIONER

QR Code: https://www.innerbody.com/image/musfov. html

EMERGENCY MEDICAL TECHNICIANQR Code: https://cpr.heart.org/en/resources/history-

of-cpr#1700s DERMATOLOGIST

QR Code: https://www.youtube.com/watch?v=Q9yklJT-TOY

PERSONAL FINANCIAL ADVISOR

QR Code: https://americanhistory.si.edu/collections/ search/object/nmah_742353

PUBLIC RELATIONS SPECIALIST QR Code: https://www.thedrum.com/

news/2017/09/15/sony-behind-the-sceneswaterloos-immersive-ghostbusters-campaign TRANSLATOR

QR Code: https://www.gutenberg.org/

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THE EIGHT PARTS OF SPEECH

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Common nouns refer to any person, place, thing, or idea.
 Examples: boy, school, vegetable, city, government, gloom

 Proper nouns are capitalized and refer to specific persons, places, objects, or ideas.

Examples: Amber, Niagara Falls, England, Saturday

PRONOUNS

A pronoun can take the place of a noun.
 Example: Bob saw his sister as she walked down the hall.

• There are three kinds of pronouns:

Subjective pronouns such as he, she, and it.

Objective pronouns such as him, her, or them.

Possessive pronouns such as mine, his, hers, and theirs.

Example: He (subjective) is looking at it (objective) through his (possessive) camera.

VFRBS

 A verb shows action or state of being and indicates the time of that action or state.

Examples: We watched the parade. (past)
We are watching the parade. (present)
We will watch the parade. (future)

ADJECTIVES

 Adjectives are words that describe nouns and specify size, color, number, and so on. This is called modifying; adjectives are modifiers.
 Example: A large, black dog ran into the old, red barn.

ADVERBS

Adverbs are words that describe verbs, adjectives, or other adverbs.
 They specify in what manner, when, where, and how much.
 Example: The boy laughed cheerfully as he flew the kite.
 He was extremely happy.

PREPOSITIONS

 Prepositions show how a noun or pronoun is related to another word in the sentence.

Examples: He walked around the corner.
She stood near the building.

CONJUNCTIONS

• Conjunctions join words, phrases, or clauses.

Examples: Neither he nor she was allowed to go to the game.

We yelled at him, but he could not hear us.

INTERJECTIONS

• Interjections are also known as exclamations and are indicated by the use of the exclamation mark (!).

Example: Hey! Look out for that truck!

PUNCTUATION

• Place a period at the end of a sentence.

Example: Andy and his friends visited the museum.

Use a period at the end of an imperative sentence that does not express strong emotion.

Example: Please pick up that piece of paper.

Use a question mark after all interrogative sentences. Example: Would you like to go to the movies?

 Use an exclamation mark after sentences that express surprise or deep feeling.

Example: I can't believe I ran into you today!

- Use a comma to separate words and phrases in a list.

 Example: We bought some socks, two shirts, and a pair of jeans.

 Use a semi-colon when a conjunction is omitted; it indicates a
- greater degree of separation than a comma would.

 <u>Example</u>: The water was very rough; our boat rocked back
- Double quotation marks are used around a direct quotation.

 Example: "It's nice to meet you," Walter said.
- Use a colon to start a list or to formally introduce a statement.
 Example: Rebecca has three pets: a dog, cat, and fish.
- Use an apostrophe for a contraction, as in hasn't (for has not), or to show possession, as in Mary's game.

THE WRITING PROCESS

Writing involves a number of processes, each of which builds on the step before it. Here are the seven steps of the writing process. There are specific strategies to be implemented at each step.

- Pre-Writing: Writers need a background of material from which
 to draw words, thoughts, and ideas before they can write. Prewriting is a brainstorming stage that can be activated through
 strategies such as semantic webs, word banks, and brainstorming.
- 2. First Draft Writing: Writers determine a purpose and style of writing to give them a direction for their work. One should write freely without undue concern for spelling or grammatical errors at this stage. The focus should be on writing ideas in a logical manner.
- 3. Response: During this step, the writer is given both verbal and non-verbal feedback to his/her writing from a partner, small group,

- teacher, or parent. Response provides the writer with information to help him/her clarify ideas and allows for the recognition of strengths in his/her writing.
- 4. Revision: Writers make their work better through revision by adding detail, descriptive words or phrases, and possibly changing sentence order for variety or clarification.
 5. Editing and Rewriting: In this stage, mechanical errors are
- corrected. Written works are first edited by the writer, before rewriting begins. Grammar skills development can be incorporated within this step.

 6. Evaluation: This step gives the reader a chance to provide feedback to the writer. To make it a maximum growth process, vary the
- evaluators and the criteria.7. Publishing: Publishing is a way to showcase the author's completed work. Making class books or displaying writing are just two of many publishing activities.
- I

RECOMMENDED WEBSITES FOR HOMEWORK HELP, ETC.

History Channel (www.history.com) – Provides a link to the History Channel home page.

Math.com (www.math.com) - Offers free math lessons and home-

National Geographic Kids (www.kids.nationalgeographic.com) — Enables you to tour the natural world (flora, fauna, people, and places) from your computer.

Kid Info (www.kidinfo.com) – Created by a retired teacher, this site offers numerous informational links to subjects covered in most U.S. schools.

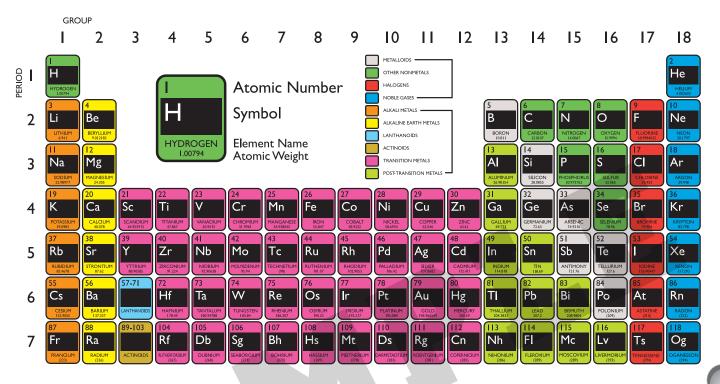
Khan Academy (www.khanacademy.org) — Online learning source that provides students with articles, practice questions, and videos to help them further their education in a variety of subjects.

InfoPlease.com (www.infoplease.com) – Lets you conduct searches for specific topics.

*PLEASE NOTE: These websites were active at time of publication.

MATHEMATICS

THE PERIODIC TABLE OF ELEMENTS





MATHEMATICAL SYMBOLS

Listed below are commonly encountered symbols.

Angle:	_	Not equal:	\neq
Arc:	\cap	Parallel:	
Greater than:	>	Perpendicular:	Τ
Greater than/equal to:	\geq	Pi:	π
Less than:	<	Ray:	\rightarrow
Less than/equal to:	\leq	Right angle:	L
Line segment:	_	Set:	{}

NUMBER LINE



MULTIPLICATION CHART

	1	2	3	4	5	6	7	8	9	10	11	12	
1	1	2	3	4	5	6	7	8	9	10	11	12	
2	2	4	6	8	10	12	14	16	18	20	22	24	
3	3	6	9	12	15	18	21	24	27	30	33	36	
4	4	8	12	16	20	24	28	32	36	40	44	48	
5	5	10	15	20	25	30	35	40	45	50	55	60	
6	6	12	18	24	30	36	42	48	54	60	66	72	
7	7	14	21	28	35	42	49	56	63	70	77	84	
8	8	16	24	32	40	48	56	64	72	80	88	96	
9	9	18	27	36	45	54	63	72	81	90	99	108	
10	10	20	30	40	50	60	70	80	90	100	110	120	
11	11	22	33	44	55	66	77	88	99	110	121	132	
12	12	24	36	48	60	72	84	96	108	120	132	144	

AREA AND VOLUME

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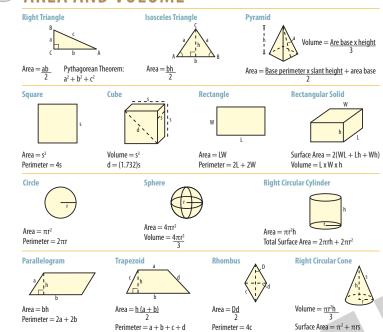
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FRACTIONS

Numerator (Top Number) **Denominator** (Bottom Number) Addition / Subtraction: find common denominators

1 (x2) = 25 (x2) = 101 (x2) = 5+2 (x2) = 10

Multiplication: multiply straight across

 $\frac{1}{5} \times \frac{3}{4} = \frac{1 \times 4}{5 \times 3} = \frac{4}{15}$

Division: multiply the first fraction by the reciprocal of the second fraction

 $\frac{1}{5} \div \frac{3}{4} = \frac{1}{5} \times \frac{4}{3} = \frac{4}{15}$

Changing Fractions to Decimals: change the denominator to a power of 10

4 (x2) = 85 (x2) = 10 = .8

Or divide by the denominator:

 $\frac{4}{5} = 4 \div 5 = .8$

FRACTIONS & PERCENTAGES

					 			_	
1	=	1.0	=	100%	1/6	=	.167	1=1	16.7%
3/4	=	.75	=	75%	1/7	= '	.143	=	14.3%
2/3	=	.667	=	66.7%	1/8	=	.125	=	12.5%
1/2	=	.5	=	50%	1/9	=	.111	=	11.1%
1/3	=	.333	=	33.3%	1/10	=	.1	=	10%
1/4	=	.25	=	25%	1/11		.091	=	9.1%
1/5	=	.2	/ =	20%	1/12	=	.083	=	8.3%

MEASUREMENTS

METRIC UNITS

TIME 60 seconds = 1 minute = 1 hour 60 minutes 24 hours 7 days = 1 week 30 days = 1 month 12 months = 1 year 365 days = 1 year 366 days = 1 leap year 100 years = 1 century

LINEAR MEASURE

1 millimeter (mm) = .001 m1 centimeter (cm) = 10 mm 1 centimeter (cm) = .01 m1 decimeter (dm) = .1 m= 100 cm 1 meter (m) 1 decameter (dkm) = 10 m 1 hectometer (hm) = 100 m1 kilometer (km) = 1,000 m

= 1,000 ml 1 liter (l) 1 milliliter (ml) = .0011 1 centiliter (cl) = .011

1 deciliter (dl) 1 decaliter (dkl) = 101 1 hectoliter (hl) = 100 l 1 kiloliter (kl) = 1.0001

WEIGHT

CAPACITY

1 gram (g) $= 1,000 \, \text{mg}$ 1 milligram (mg) $= .001 \, q$ 1 centigram (cg) $= .01 \, q$ 1 decigram (dg) = .1g $1 \operatorname{decagram}(\operatorname{dkg}) = 10 \operatorname{g}$ 1 hectogram (hg) = 100 g1 kilogram (kg) = 1,000 g

STANDARD UNITS

LINEAR MEASURE

1 foot (ft.) 12 inches 1 dram (dr) = 36 inches 1 yard (yd.) 1 ounce (oz) 1 yard (yd.) = 3 feet 1 pound (lb) 1 rod = 16 ½ feet 1 stone 1 furlong 660 feet 1 quarter (qtr) 1 mile (mi.) = 320 rods 1 quintal 1 mile (mi.) = 5,280 feet 1 ton

AREA

1 sq. foot (ft.2) = 144 in.² 1 sq. yard (yd.²) $= 9 \, \text{ft.}^2$ 1 sq. rod (rod²) $= 30.25 \text{ yd.}^{\circ}$ = 43,560 ft. 1 acre = 4,840 yd 1 acre 1 acre $= 60 \text{ rods}^2$ 1 sq. mile = 640 acres **VOLUME**

1 cubic foot (ft. 3) = 1,728 in.

1 U.S. oil

barrel (bbl.)

CAPACITY - DRY MEASURE 1 quart (qt.) = 2 pints (pt.) 1 peck (pk.) = 8 quarts 1 bushel (bu.) = 4 pecks 128 cu. ft.

1 cubic yard (yd. 3) = 27 ft. 3

CAPACITY - LIQUID MEASURE

= 42 gallons

1 tablespoon (T) = 3 teaspoons (t) = 16 tablespoons 1 cup (c) 1 pint (pt) = 2 cups 1 pint = 4 gills (gi.) = 2 pints 1 quart (qt.) 1 gallon (gal.) = 4 quarts 1 U.S. liquid barrel (bbl.) = 31 ½ gallons

1 hogshead (hhd.) = 2 barrels

STANDARD UNITS (Cont.)

WEIGHT (AVOIRDUPOIS)

= 1/16 oz= 16 dr = 16 oz = 14 lb= 2 stones, 28 lb = 100 lb $= 2.000 \, \text{lb}$ 1 tonne (long ton) = 2,240 lb

CONVERSIONS

LINEAR MEASURE

1 inch 1 inch $= 2.54 \, \text{cm}$ 1 foot = 30.48 cm 1 yard $= 91.44 \, \text{cm}$ 1 yard $= .9144 \, \mathrm{m}$ = 1,609 m 1 mile 1 mile $= 1.609 \, \text{km}$ AREA

1 sq. foot (ft.2) $= .0929 \,\mathrm{m}^2$ 1 sq. yard (yd.2) $= .8361 \,\mathrm{m}^2$ 1 sq. rod (rod²) $= 25.29 \,\mathrm{m}^2$ 1 acre $= 4,046.72 \,\mathrm{m}^2$ $= 2.59 \text{ km}^2$ 1 sq. mile **VOLUME**

 $1 \text{ cubic cm (cm}^3) = .061 \text{ in.}^3$ 1 cubic inch (in. 3) = 16.39 cm 3 1 cubic foot (ft.3) $= .0283 \, \mathrm{m}^3$ $1 \text{ cubic meter (m}^3) = 1.308 \text{ yd.}^3$ 1 cubic yard (yd. 3) = .7646 m

EQUATIONS

LINEAR MEASURE

centimeters × .3937 = inches inches \times 2.54 meters \times 3.2808 = feet feet \times .3048 kilometers \times .6214 = miles miles \times 1.609 = kilometer

AREA

 $m^2 \times 10.76$ = ft. ft.2 × .0929 $= m^2$ $km^2 \times .3861$ = mi^2 $mi^2 \times 2.59$ = km 2

WEIGHT

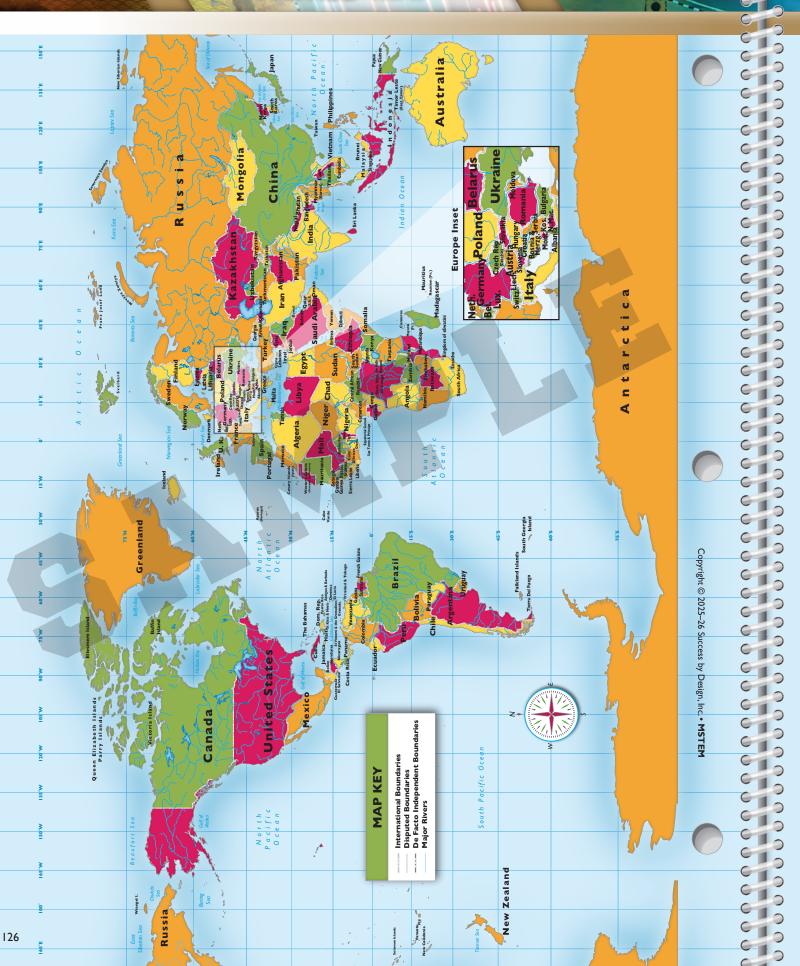
grams \times .0353 = ounces ounces \times 28.35 = grams kilograms \times 2.2 = pounds pounds × .4536 = kilograms

CAPACITY

milliliters \times .0338 = fl ounces flounces \times 29.575 = ml liters \times .2642 = gallons $gallons \times 3.785$ = liters

TEMPERATURE

 $^{\circ}\text{C} \times 1.8 + 32 = ^{\circ}\text{F}$ $(^{\circ}F - 32) \times .555 = ^{\circ}C$





MEXICO &
CENTRAL AMERICA Belize - Belmon

> Costa Rica – San José UNITED STATES CAPITALS

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AZ Arizona – Phoenix

AR Arkansas – Little Rock CA California - Sacramento

CO Colorado - Denver CT Connecticut – Hartford

DE Delaware – Dover FL Florida – Tallahassee

Guatemala - Guatemala City Honduras – Tegucigalpa Mexico - Mexico City

GA Georgia – Atlanta HI Hawaii – Honolulu

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IA Iowa – Des Moines KS Kansas – Topeka

KY Kentucky - Frankfort LA Louisiana – Baton Rouge

ME Maine – Augusta MD Maryland - Annapolis MA Massachusetts – Boston Nicaragua – Managua Panama - Panama City

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MS Mississippi – Jackson MO Missouri – Jefferson City

MT Montana – Helena NE Nebraska – Lincoln

NV Nevada - Carson City NH New Hampshire - Concord NJ New Jersey - Trenton

NM New Mexico – Santa Fe NY New York - Albany NC North Carolina – Raleigh CARIBBEAN (Abbreviated List Based on

Mab Features) Bahamas - Nassau

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SC South Carolina - Columbia

SD South Dakota - Pierre

TN Tennessee – Nashville

UT Utah – Salt Lake City

VT Vermont – Montpelier

TX Texas – Austin

Dominican Republic - Santo Domingo Haiti - Port-au-Prince Jamaica - Kingston

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WY Wyoming - Cheyenne

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GU Guam – Hagåtña* PR Puerto Rico - San Juan MP Northern Mariana Islands –Saipan³

VI Virgin Islands - Charlotte Amalie

* not featured on this mab