G4-G5 Basic

G5-G6 Advanced

Helping With Math

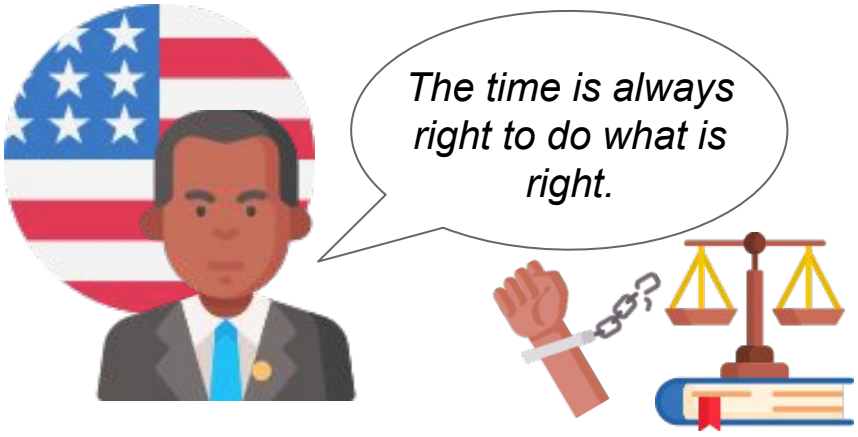
GRADES

Measuring Skill
Fahrenheit and Celsius Scales

Suitable for students
aged 8-11

This pack is suitable for learners aged 8-11 years old or 4th to 6th grades. The content covers fact files and relevant basic and advanced activities of Fahrenheit and Celsius scales topics that aim to develop and strengthen the learners' measuring skills.

Martin Luther King Jr. Day



Martin Luther King Jr. Day is a federal holiday in the United States of America. It is observed on the third Monday of January each year to commemorate his birth.

Who was Martin Luther King Jr.?

- Martin Luther King Jr., or MLK, was born in Atlanta, Georgia, on January 15, 1929.
- He was a Nobel Prize winner, social activist and baptist pastor who fought for equality and human rights of African-Americans in the US.
- He was known for his great role in the establishment of the Civil Rights Act and Voting Rights Act.

MEASUREMENT

Measurement describes and compares concrete and mathematical objects by associating numbers and units of measurement. In other words, it shows the size or amount of something.

Measurement helps us identify how large or small a physical quantity is compared to the unit of measure in mathematics.

What are some properties of measurement?

- Length
- Mass
- Weight
- Time
- Money
- Temperature
- Perimeter
- Area
- Surface Area
- Volume

LEARNING MEASUREMENT...

- It strengthens your understanding of numbers.
- It helps you compare, approximate, and count accurately.
- It helps you sort objects by size, how big or small it is.
- It allows you to know the exact size of a thing.

- There are five primary disciplines of mathematics, namely: number sense, algebra, geometry, data analysis and probability, and measurement.
- These aforementioned disciplines must be transferred effectively to the students through a holistic approach in teaching.

MEASURING SKILL

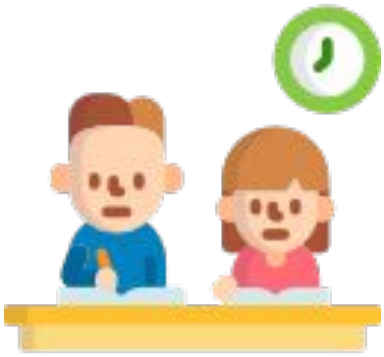
As mentioned, measurement is one of the vital disciplines. Thus, measuring skills play an important role in the development of a child's learning.

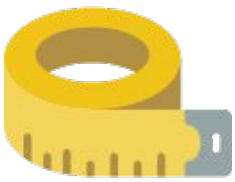
Measuring skills…

- cover the skills needed for a learner to effectively do the measuring.
- are the processes of how to measure physical attributes of objects appropriately and accurately using measurement tools and techniques.

During their early education, children developed these measuring skills. They learn to...

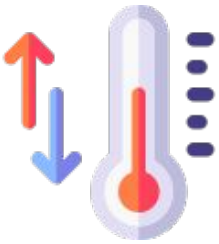
- compare objects by size (big, bigger, biggest)
- compare objects by length, height, and weight
- compare groups of objects and understand that a lesser number is also a lesser quantity
- understand basic concepts of time, such as this morning or yesterday, or in a minute
- use non-standard forms of measurement and eventually the standard forms.





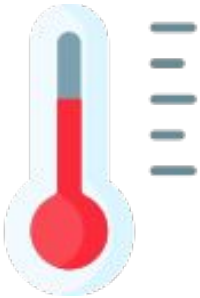
CONCEPTS

TEMPERATURE



- Temperature refers to the hotness or coldness of an object or body.
- In a more scientific context, it is the average measure of the kinetic energy for particles of matter.
- The higher the kinetic energy, the higher the temperature will be.

The tool that can be used to measure temperature is called a thermometer. We can express the temperature of an object or body by using **Fahrenheit, Celsius, or Kelvin scales.**



THE FAHRENHEIT SCALE

- It is a temperature scale based on 32° (water's freezing point) and 212° (water's boiling point).
- It was named a German physicist Daniel Gabriel Fahrenheit during 18th century.
- A normal body temperature in Fahrenheit scale is 98.6°
- Fahrenheit temperature scale is commonly used in United States.
- To convert Celsius to Fahrenheit,

$$^{\circ}F = (1.8 \times {}^{\circ}C) + 32$$

- To convert Kelvin to Fahrenheit,

$$^{\circ}F = (K - 273.15)(1.8) + 32$$

CONCEPTS

THE CELSIUS SCALE

- It is also called as Centigrade scale. A temperature scale based on 0° (water's freezing point) and 100° (water's boiling point).
- It was invented by Anders Celsius, a Swedish astronomer, in 1742.
- A normal body temperature on Fahrenheit scale is 37°
- Celsius temperature scale is commonly used in metric systems and in other countries.
- To convert Fahrenheit to Celsius,

  $$°C = (°F - 32) \times 5/9$$
- To convert Kelvin to Celsius,

  $$°C = (K - 273.15)$$

THE KELVIN SCALE

- It is the base unit of thermodynamic measurement in SI unit.
- A scale named for a British physicist William Thompson who was also known as Lord Kelvin.

TRIVIA

According to NASA, the coldest place on Earth is a high ridge in Antarctica on the East Antarctic Plateau, where temperatures can be below minus 133.6 degrees Fahrenheit (minus 92 degrees Celsius).

CONVERTING UNITS OF MEASUREMENT (TEMPERATURE)

1. What is the equivalent measurement of 20℃ in Fahrenheit and Kelvin scales?

Remember:

- To convert Celsius to Fahrenheit,

$$℉ = (1.8 \times ℃) + 32$$

20℃ to ℉

$$℉ = (1.8 \times ℃) + 32$$
$$℉ = (1.8 \times 20℃) + 32$$
$$℉ = (1.8 \times 20) + 32$$
$$℉ = (36) + 32$$
$$\mathbf{℉ = 68}$$

- To convert Celsius to Kelvin,

$$K = ℃ + 273.15$$

So, 20℃ to K

$$K = ℃ + 273.15$$
$$K = 20 + 273.15$$
$$\mathbf{K = 293.15}$$

2. What is the equivalent measurement of 20℉ in Celsius?

- To convert Fahrenheit to Celsius,

$$℃ = (℉ - 32) \times 5/9$$
$$℃ = (20 - 32) \times 5/9$$
$$℃ = (- 12) \times 5/9$$
$$℃ = (- 12) \times 5/9$$
$$\mathbf{℃ = - 6.67}$$ (rounded off to the nearest hundredths)

TABLE OF ACTIVITIES

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THIS IS FOR MLK

G4-G5
Basic

Appreciate the efforts and perseverance of Martin Luther King Jr. to fight for equal rights of people regardless of their color and race by completing the following statements below about temperature.

1. Temperature refers to the hotness or _____ of an object or body.

2. In science, temperature is the average measure of _____ energy for particles of matter.

3-4. The higher the _____ energy, the _____ the temperature will be.

5. In Fahrenheit scale, the freezing point and boiling point of water are _____ and _____ respectively.

6. The _____ scale is commonly used in the United States.

7. The Celsius scale is invented in 1742 by a _____ astronomer named Anders Celsius.

Swedish	coldness		German
lower	kinetic	higher	Fahrenheit
Celsius	32° and 212°		212° and 32°

MLK: A SMART KID

G4-G5
Basic

MLK is known for being a gifted student. At the age of 15, he was admitted to Morehouse College, which was also his father's alma mater. Show that you can perform well in school too by estimating the temperature of the following objects. Encircle your answer.

1. The average temperature in a day during fall is _____.

a. 54 ℉ b. 54℃ c. 54 K

2. The boiling point of water is _____.

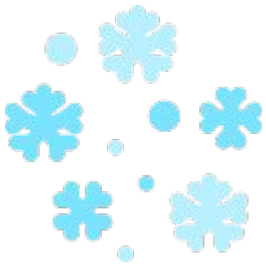
a. 100 ℉ b. 100℃ c. 100 K

3. The temperature of a freshly cooked bread is _____.

a. 190 ℉ b. 190℃ c. 190 K

4. The average temperature in a day during winter is _____.

a. 273 ℉ b. 273℃ c. 273 K



THE PRIDE OF ATLANTA CITY

G4-G5 Basic

Martin Luther King Jr. was born on January 15, 1929, in Atlanta, Georgia. The table below shows the average weather temperature of the city year-round. Analyze the data below and answer the questions that follow. Write your answer in the second column.

Month	Temperature in Celsius
January	0° - 12 °
February	2° - 14 °
March	6° - 19 °
April	9° - 23 °
May	14° - 27 °
June	18° - 30 °

Month	Temperature in Celsius
July	21° - 32 °
August	20° - 31 °
September	17° - 28 °
October	10° - 23 °
November	5° - 18 °
December	2° - 13 °

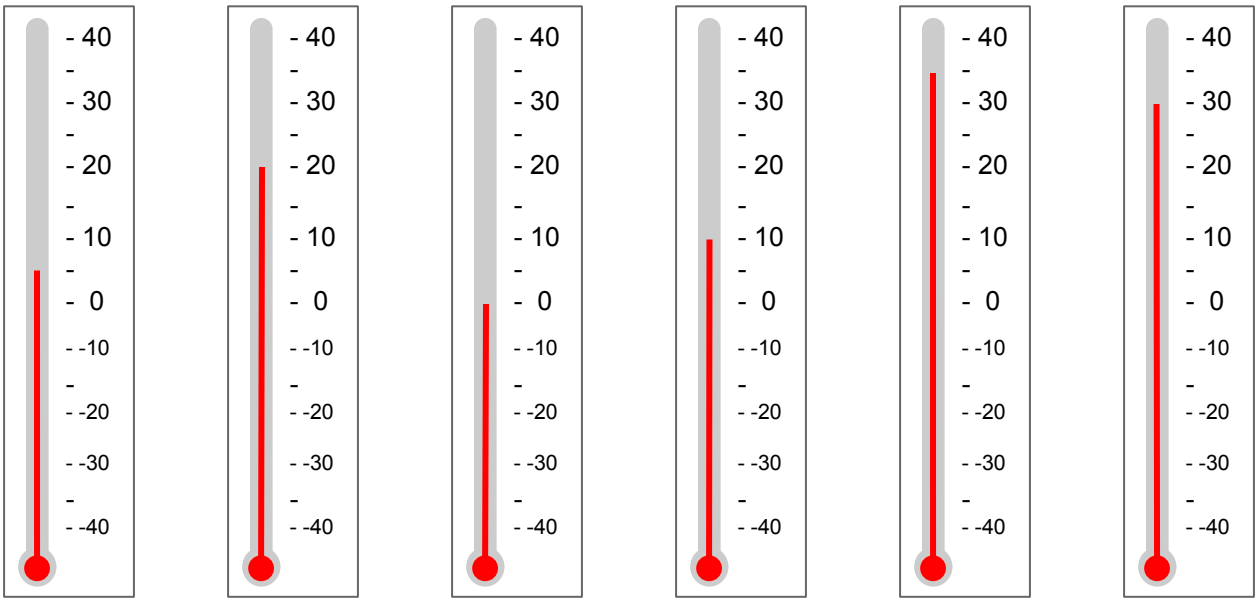
1. Which month has the hottest weather?	
2. Which month has the coldest weather?	
3. If the highest temperature record will be converted to Kelvin, what is the equivalent of that?	
4. What is the equivalent of the lowest temperature in Fahrenheit?	
5. What is the equivalent of the lowest and highest temperature, in Fahrenheit, for the month of January?	

SWEET AUBURN NEIGHBORHOOD TIMES

G4-G5 Basic

Martin, together with his parents and siblings spent their childhood living in Sweet Auburn curb, a home for prominent and prosperous African-Americans in the US. These are the recorded weather temperature in that place. Write the temperature reading in Celsius and convert it to Kelvin.

1. 2. 3. 4. 5. 6.

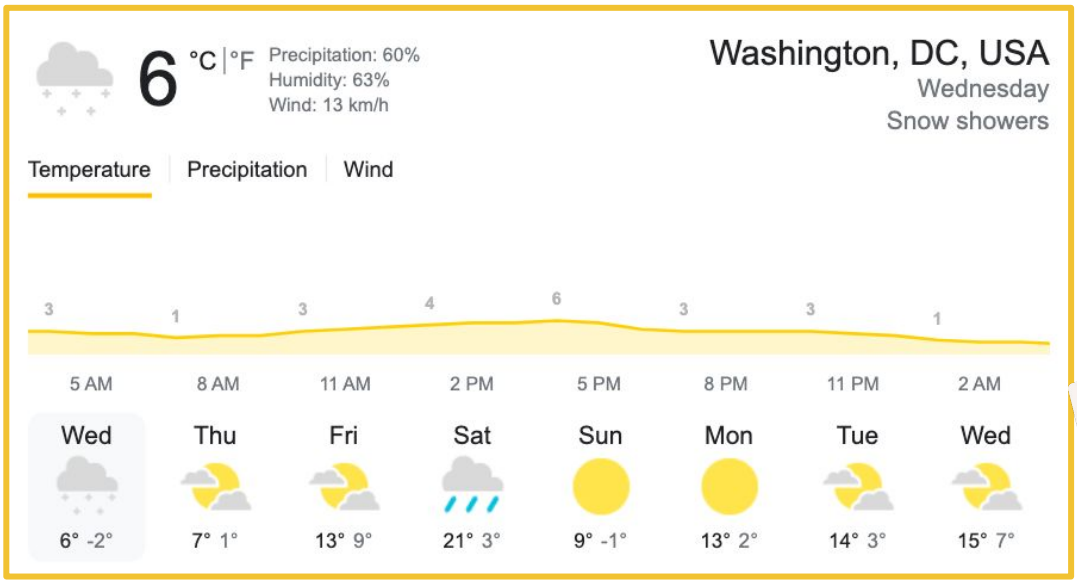


1.	2.	3.
4.	5.	6.

MARCH ON WASHINGTON

G4-G5
Basic

March on Washington in August 1963 was the occasion of MLK's iconic "I Have a Dream" speech. If a weather forecast was released on that day, use your learning about temperature to analyse the forecast and answer the given questions.



1. Summarize the content of the weather forecast using your understanding of Fahrenheit and Celsius scales.

2. If the "March on Washington" will happen on Saturday, what will be your reminder to the attendees of the protest?

CIVIL RIGHTS MOVEMENT

G5-G6 Advanced

Join the Civil Rights Movement to advocate freedom and equality regardless of race. Fight for what is right by converting the following Fahrenheit temperature to Celsius.

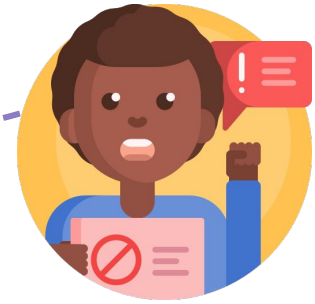
Note: If your answer is in decimal form, round it off to the nearest hundredths digit.

1) 56℉	2) 70℉	3) -36℉
4) 100℉	5) 3℉	6) 21℉
7) -14℉	8) -6℉	9) 190℉

I HAVE A DREAM

G5-G6 Advanced

Martin Luther King Jr.'s iconic speech will always inspire current and future generations of leaders who would like to fight for freedom and equality continuously. Show your admiration to the social leader by converting Celsius to Fahrenheit scales.



5) 212°C

4) 81°C

3) -12°C

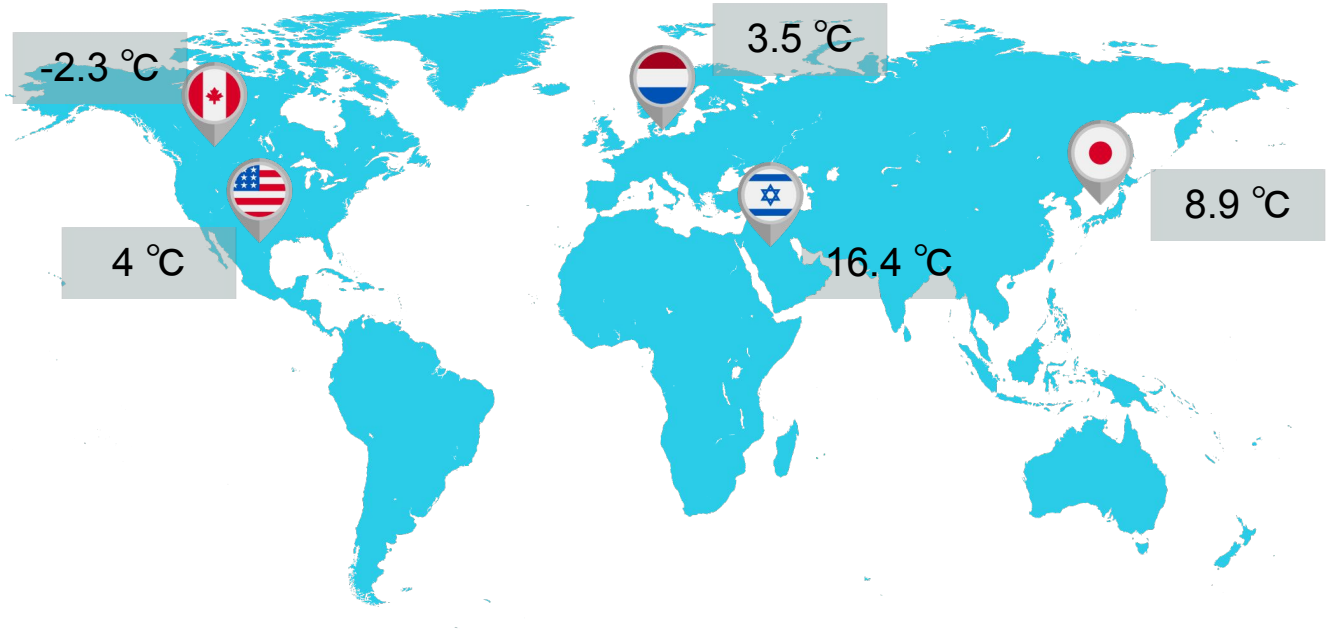
2) -5°C

1) 24°C

CELEBRATING MLK DAY AROUND THE WORLD

G5-G6 Advanced

These countries celebrate MLK day every January. The weather temperature during that month is also shown below. Convert the given Celsius scales to Kelvin.



Name of country:	Name of country:	Name of country:
Name of country:	Name of country:	

A NON-VIOLENT SOCIAL MOVEMENT LEADER

G5-G6 Advanced

Appreciate this great man — a non-violent social movement leader, by converting temperatures between Fahrenheit and Celsius.

1) 15 ℃

2) 54 ℉

3) 46 ℃

4) -8 ℉

5) -23 ℃

6) 97 ℉

Martin Luther King Jr.
January 15, 1929 - April 4, 1968

Martin Luther King, Jr. is one of the renowned historical figures in the United States. His dedication to providing social reform made him one of the respectable leaders of the African-American community. He fought in a peaceful and respectful manner, serving as an example of how a quiet voice can create a loud echo.

TASK AND LETTERS FOR MLK

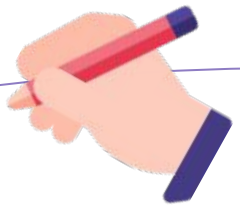
G5-G6 Advanced

Before writing a letter for MLK, solve first the two word problems below.

1. Which object is hotter? An iron cup that has a temperature of 180 ℉ or an iron skillet that has a temperature of 75 ℃? Prove your answer.

2. To celebrate MLK day, a family is baking a carrot cake. For a flourless carrot cake, the internal temperature must be 93-96 degrees Celsius. What is the equivalent of that in Fahrenheit and Kelvin scales?

A Letter for Martin Luther King Jr.



ANSWER GUIDE

Activity 1

1. Coldness
2. Kinetic
3.&4. Kinetic, higher
5. 32 degrees and 212 degrees
6. Fahrenheit
7. Swedish

Activity 2

1. A
2. B
3. A
4. C

Activity 3

1. July
2. January
3. 305.15 K
4. 32 F
5. 32 F to 53.6 F

Activity 4

1. 5 C = 41 F = 278.15 K
2. 20 C = 68 F = 293.15 K
3. 0 C = 32 F = 273.15 K
4. 10 C = 50 F = 283.15 K
5. 35 C = 95 F = 308.15 K
6. 30 C = 86 F = 303.15 K

Activity 5

Possible answer:
1. The temperature this week is cold. The temperature reading, in Celsius, is ranging from -2 C to 21 C.
2. The attendees of the protest march must wear thick clothes, jackets, sweater, and gloves because the weather will be cold.

ANSWER GUIDE

Activity 6

1. 13.33 C
2. 21.11 C
3. -37.78 C
4. 37.78 C
5. -16.11 C
6. -6.11 C
7. -25.56 C
8. -21.11 C
9. 87.78 C

Activity 7

1. 75.2 F
2. 23 F
3. 10.4 F
4. 177.8 F
5. 413.6 F

Activity 8

CANADA = 27.86 F = 270.85 K
USA = 39.2 F = 277.15 K
THE NETHERLANDS = 38.3 F = 276.65 K
ISRAEL = 61.52 F = 289.55 K
JAPAN = 48.02 F = 282.05 K

Activity 9

1. 59 F
2. 12.22 C
3. 114.8 F
4. -22.22 C
5. -9.4 F
6. 36.11 C

Activity 10

1. 180 F = 82.22 C is hotter than 75 C. The iron cup is hotter than the iron skillet by 7.22 C.
2. 200-205 F.

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