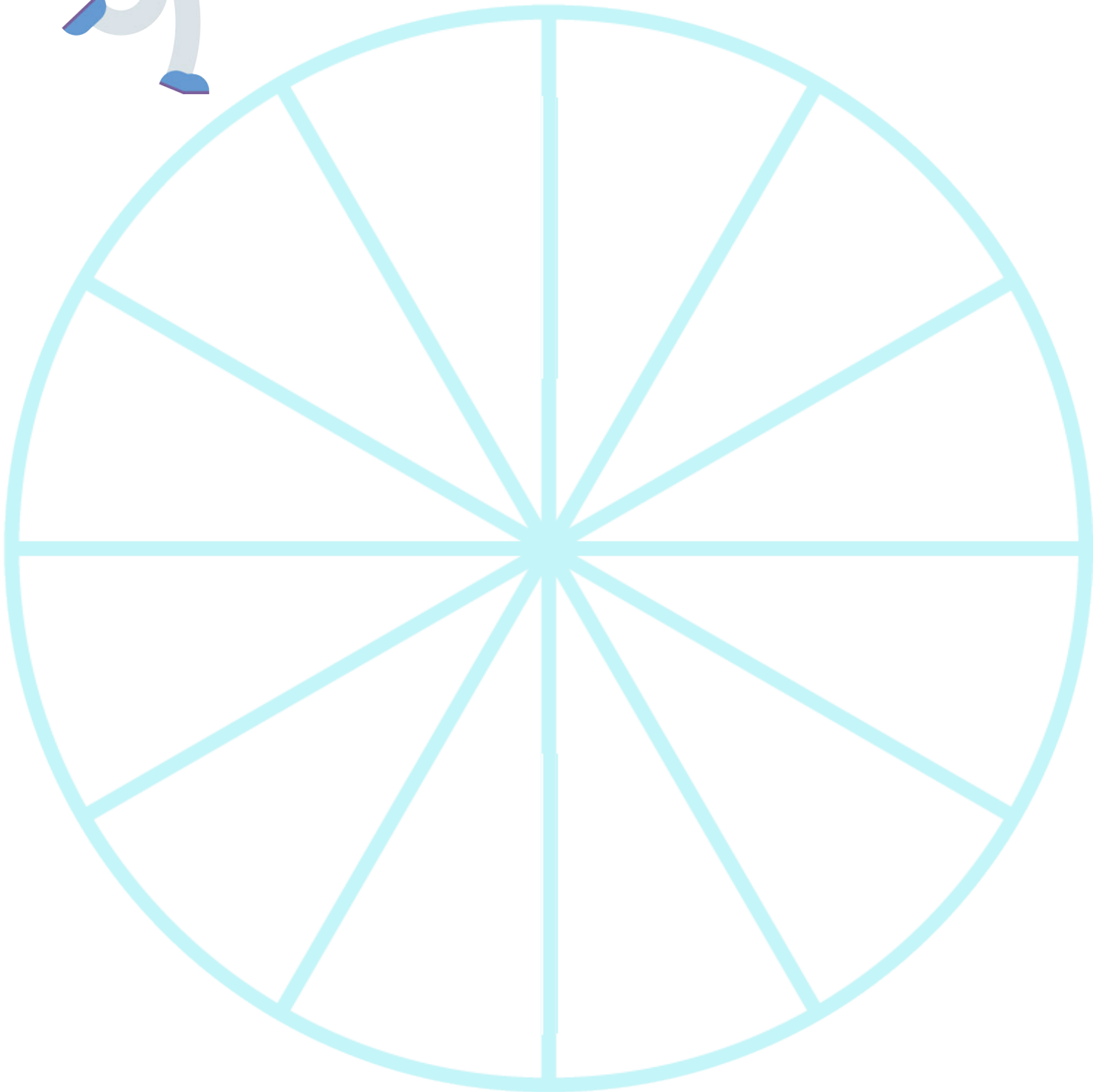


Name: _____ Date: _____



Use a pencil to create the gnomon for your sundial in the centre of this circle. Throughout the day, mark the length and shape of the shadow created on your sundial. Be sure to make a note of the time for each shadow you mark.



Name: _____ Date: _____



Sundial Investigation

What we did...

Draw and label a picture of our investigation

What do you notice about the direction of the shadows you recorded?

What do you notice about the length of the shadows you recorded?

How are day and night created?

Earth _____ the Sun and also rotates on its _____ . Earth _____ once every _____ hours or one _____ . The places on Earth which are _____ the Sun are lit up and experience _____. The parts of Earth which are facing away from the Sun are in shadow and experience _____ .

24
night-time

facing
orbits

daytime
axis

rotates
day

Name: _____ Date: _____



Sundial Investigation

What we did...

Draw and label a picture of our investigation

What do you notice about the direction of the shadows you recorded?

What do you notice about the length of the shadows you recorded?

How are day and night created?

24	facing	daytime	rotates	shadow	Sun
night-time	orbit	axis	day	lit	Earth

Name: _____ Date: _____



Sundial Investigation

What we did...

Describe our investigation

What do you notice about the direction of the shadows you recorded?
Why do you think this has happened?

What do you notice about the length of the shadows you recorded?
Why do you think this has happened?

How are day and night created?

UTC-11

A digital clock display with a black background and a grey border. It shows the time 00:00 in bright cyan LED-style digits. There are two dots for a colon between the hour and minute digits.

UTC-10



00:00

UTC-9



00:00

UTC-8



04:00

UTC-7



09:00

UTC-6



00:00

UTC-5



00:00

UTC-4



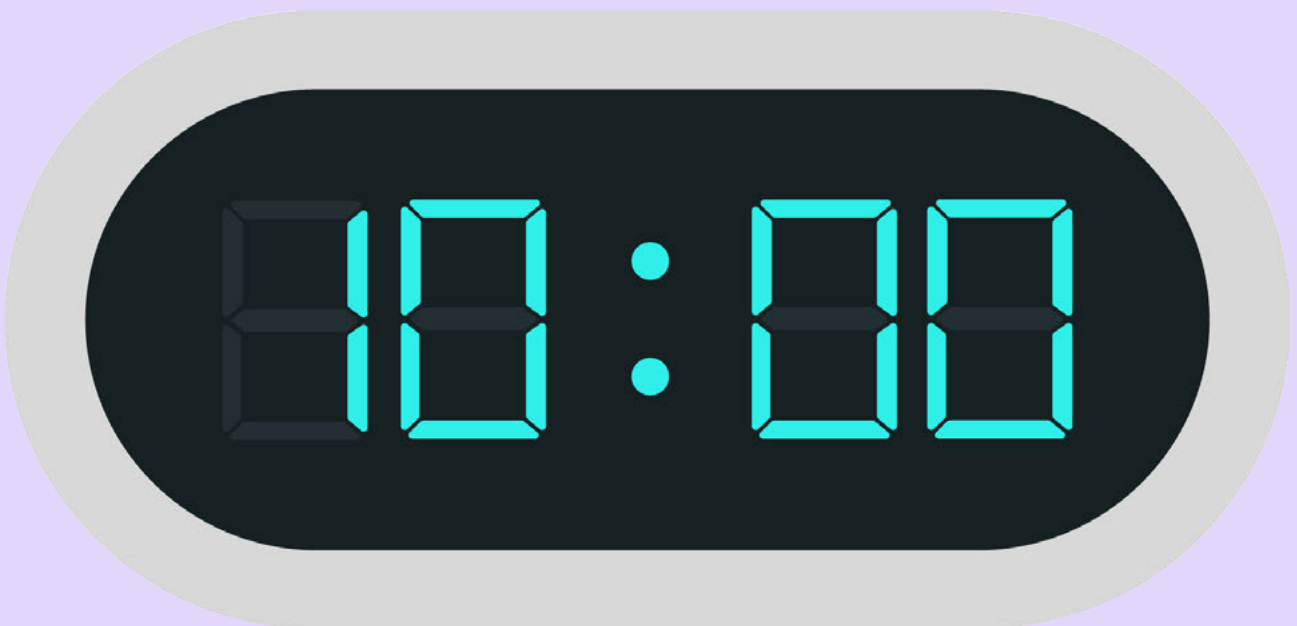
00:00

UTC-3

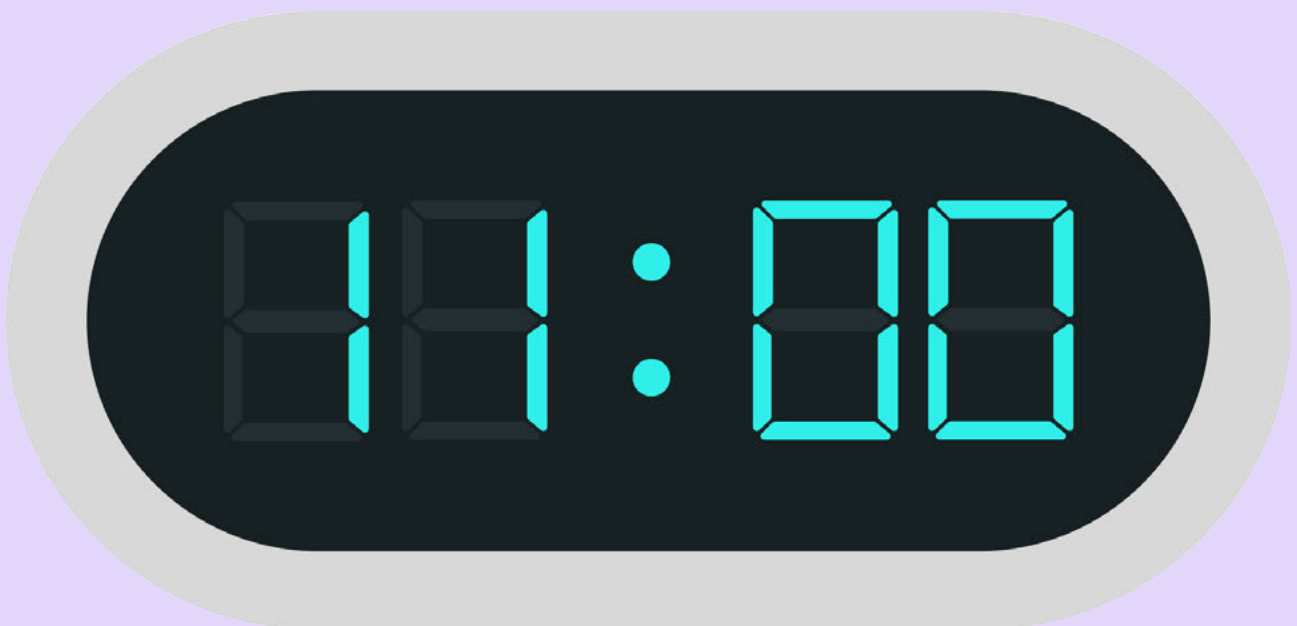


09:00

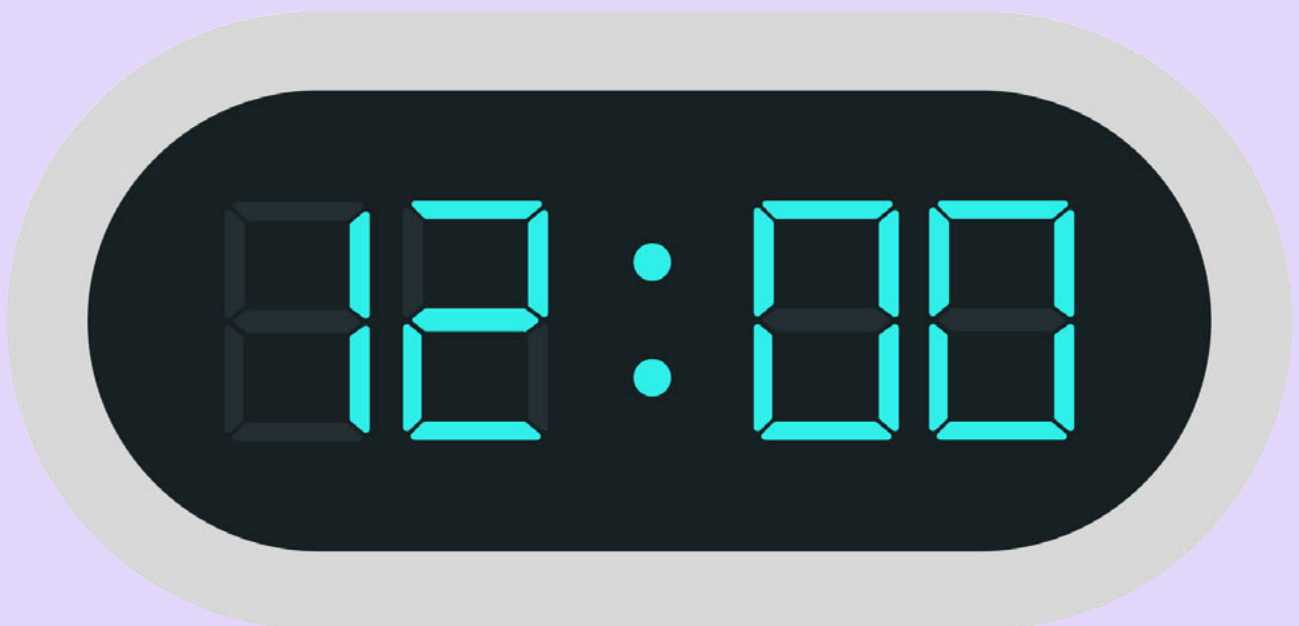
UTC-2



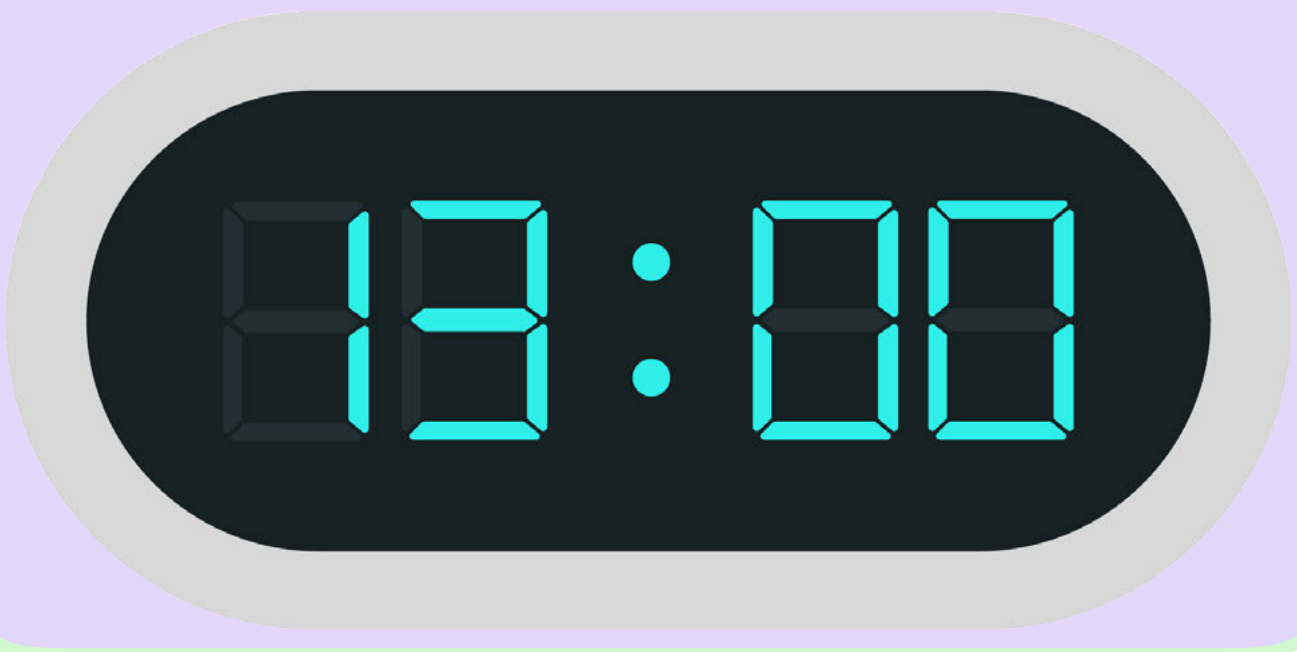
UTC-1



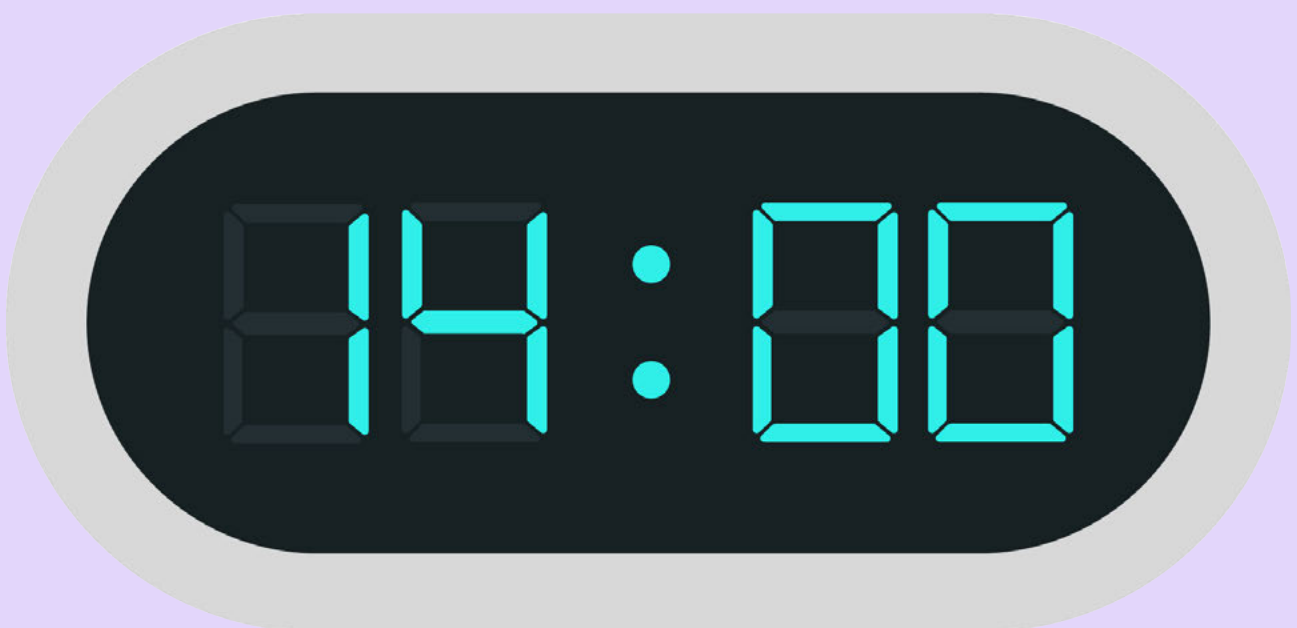
UTC+0



UTC+1



UTC+2



UTC+3



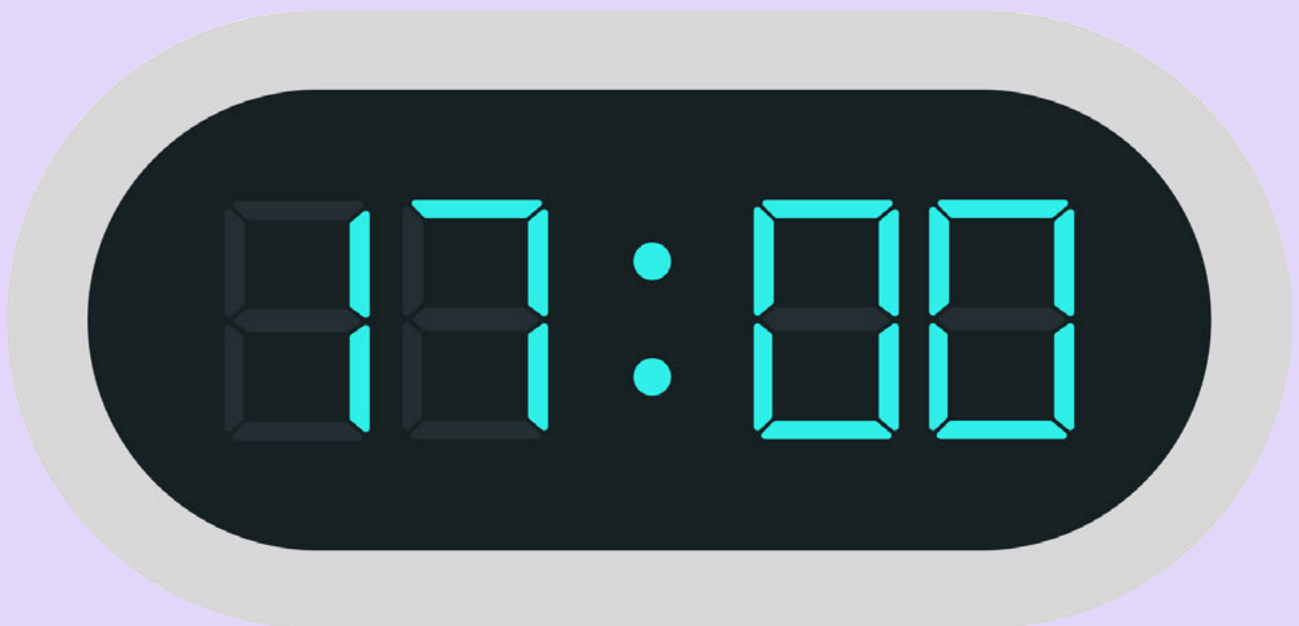
12:00

UTC+4

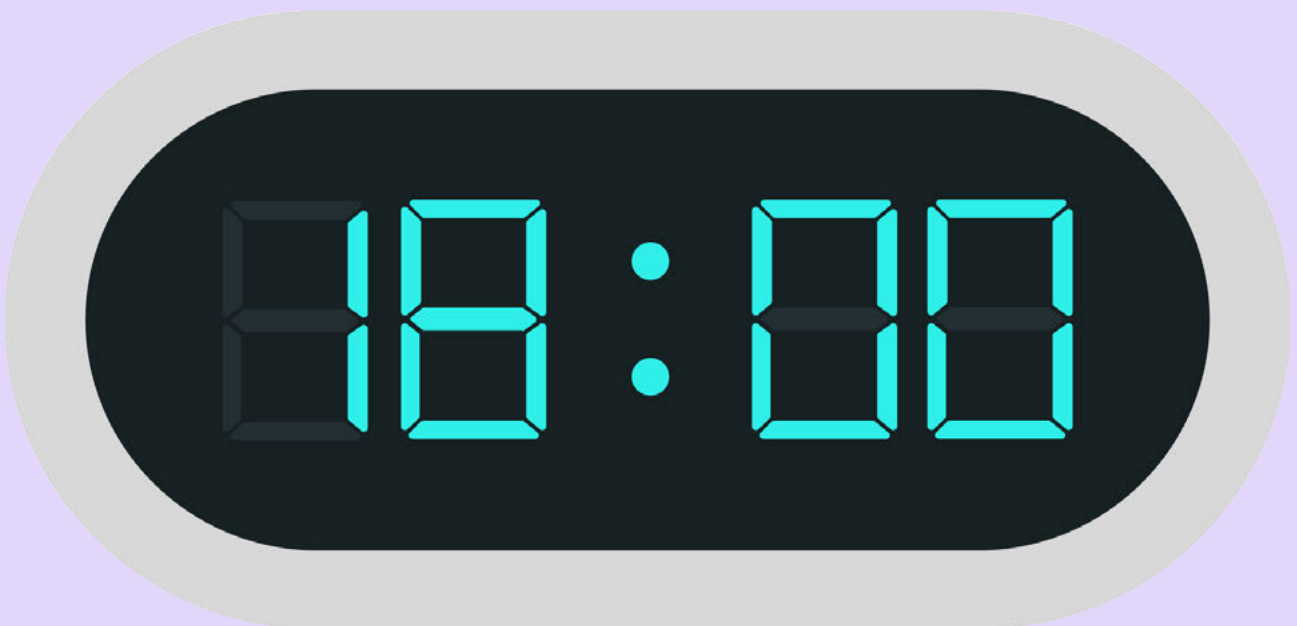


12:00

UTC+5



UTC+6



UTC+7



12:00

UTC+8



00:00

UTC+9



09:00

UTC+10



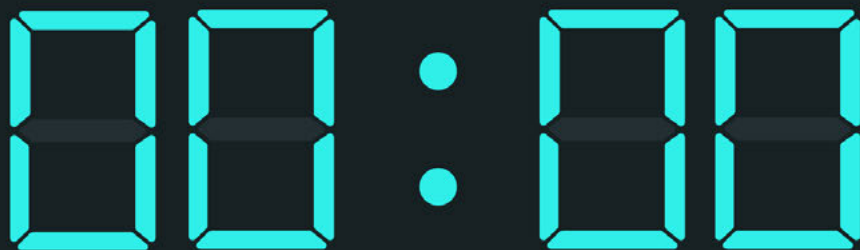
22:00

UTC+11



11:00

UTC+12

A digital clock display with a black background and a grey border. It shows the time 00:00 in bright cyan LED-style digits. There are two dots for a colon between the two pairs of digits.

City

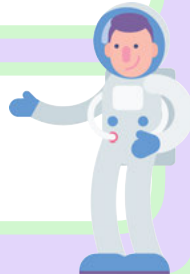
Madrid

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Dakar

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

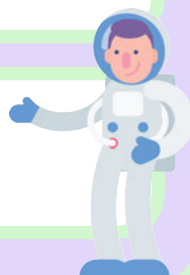
Rio de Janeiro

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Manaus

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Washington DC

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

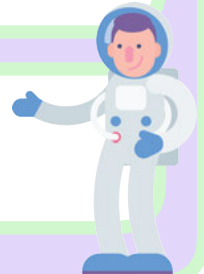
Mexico City

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

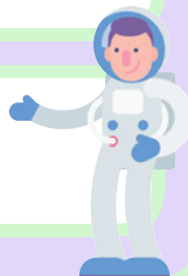
Calgary

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

San Francisco

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

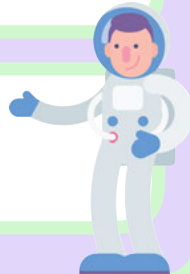
Honolulu

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Alofi

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

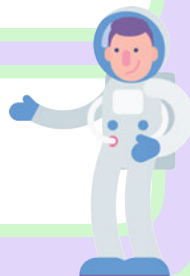
Cairo

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Nairobi

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Muscat

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Islamabad

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

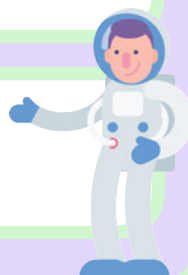
Omsk

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Hanoi

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

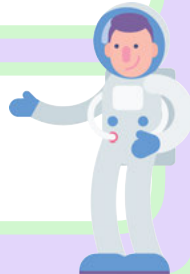
Hong Kong

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Tokyo

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

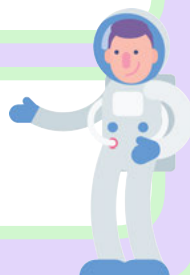
Brisbane

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Perth

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Suva

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Reykjavik

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

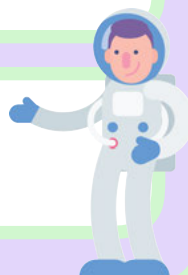
Oslo

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



City

Lima

Country

Current local
time

UTC +/-

Another
location in this
time zone is...



Which is the biggest country with only one time zone?

What do the countries with diagonal lines mean?

Why do some countries have more than one timezone e.g. USA?

Name three countries that have more than one timezone.

How many timezones does Russia have? Hint: Kaliningrad is in Russia.

Name another country with the same time zone as Bangladesh.

Find a location within the timezone UTC-2.

If it is 3 pm Timbuktu, Mali, what time will it be in Riyadh, Saudi Arabia?

Name: _____ Date: _____



Sundial Investigation

What we did...

Draw and label a picture of our investigation

What do you notice about the direction of the shadows you recorded?

What do you notice about the length of the shadows you recorded?

How are day and night created?

Earth orbits the Sun and also rotates on its axis. Earth rotates once every 24 hours or one day. The places on Earth which are facing the Sun are lit up and experience daytime. The parts of Earth which are facing away from the Sun are in shadow and experience night-time.

24
night-time

facing
orbits

daytime
axis

rotates
day

City

Madrid

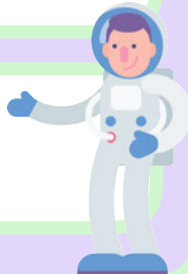
Country

Spain

Current local
time

UTC +/-

UTC+1

Another
location in this
time zone is...

City

Dakar

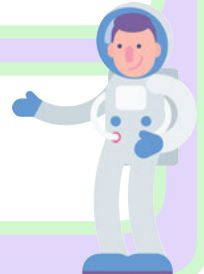
Country

Senegal

Current local
time

UTC +/-

UTC

Another
location in this
time zone is...

City

Rio de Janeiro

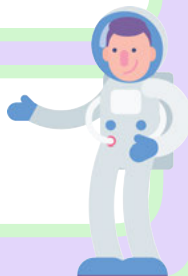
Country

Brazil

Current local
time

UTC +/-

UTC-3

Another
location in this
time zone is...

City

Manaus

Country

Brazil

Current local
time

UTC +/-

UTC-4

Another
location in this
time zone is...

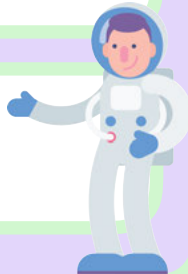
City

Washington DC

Country

USACurrent local
time

UTC +/-

UTC-5Another
location in this
time zone is...

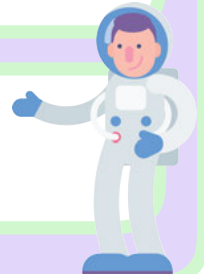
City

Mexico City

Country

MexicoCurrent local
time

UTC +/-

UTC-6Another
location in this
time zone is...

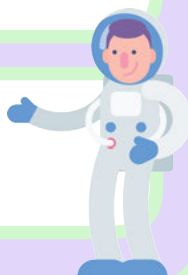
City

Calgary

Country

CanadaCurrent local
time

UTC +/-

UTC-7Another
location in this
time zone is...

City

San Francisco

Country

USACurrent local
time

UTC +/-

UTC-8Another
location in this
time zone is...

City

Honolulu

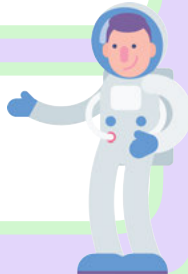
Country

USA

Current local
time

UTC +/-

UTC-10

Another
location in this
time zone is...

City

Alofi

Country

Niue

Current local
time

UTC +/-

UTC-11

Another
location in this
time zone is...

City

Cairo

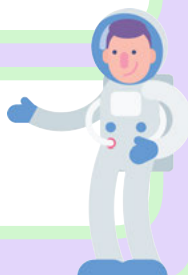
Country

Egypt

Current local
time

UTC +/-

UTC+2

Another
location in this
time zone is...

City

Nairobi

Country

Kenya

Current local
time

UTC +/-

UTC+3

Another
location in this
time zone is...

City

Muscat

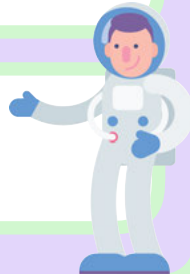
Country

Oman

Current local
time

UTC +/-

UTC+4

Another
location in this
time zone is...

City

Islamabad

Country

Pakistan

Current local
time

UTC +/-

UTC+5

Another
location in this
time zone is...

City

Omsk

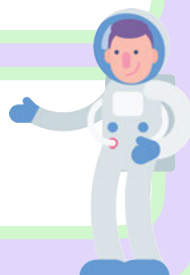
Country

Russia

Current local
time

UTC +/-

UTC+6

Another
location in this
time zone is...

City

Hanoi

Country

Vietnam

Current local
time

UTC +/-

UTC+7

Another
location in this
time zone is...

City

Hong Kong

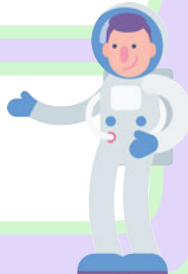
Country

China

Current local
time

UTC +/-

UTC+8

Another
location in this
time zone is...

City

Tokyo

Country

Japan

Current local
time

UTC +/-

UTC+9

Another
location in this
time zone is...

City

Brisbane

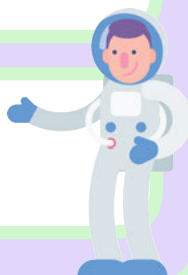
Country

Australia

Current local
time

UTC +/-

UTC+10

Another
location in this
time zone is...

City

Perth

Country

Australia

Current local
time

UTC +/-

UTC+8

Another
location in this
time zone is...

City

Suva

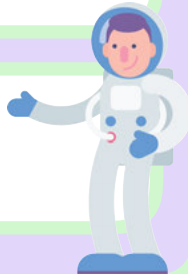
Country

Fiji

Current local
time

UTC +/-

UTC+12

Another
location in this
time zone is...

City

Reykjavik

Country

Iceland

Current local
time

UTC +/-

UTC

Another
location in this
time zone is...

City

Oslo

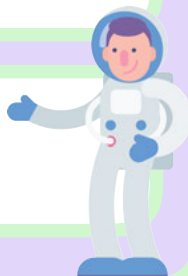
Country

Norway

Current local
time

UTC +/-

UTC+1

Another
location in this
time zone is...

City

Lima

Country

Peru

Current local
time

UTC +/-

UTC-5

Another
location in this
time zone is...

Which is the biggest country with only one time zone?

China

What do the countries with diagonal lines mean?

Their timezones are not in whole hours e.g. India's timezone is UTC+5:30

Why do some countries have more than one timezone e.g. USA?

They're so big that the different places in the same country would experience day/night at different times.

Name three countries that have more than one timezone.

Canada, USA, Russia, Greenland. Brazil, Australia, Kazakhstan, etc.

How many timezones does Russia have? Hint: Kaliningrad is in Russia.

Eleven. (Kaliningrad is in Russia but separate from the main country)

Name another country with the same time zone as Bangladesh.

Kazakhstan, Kyrgyzstan, Russia, Bhutan

Find a location within the timezone UTC-2.

King Edward Point, South Georgia (Within DST (Oct-March), Greenland and some parts of Brazil)

If it is 3 pm Timbuktu, Mali, what time will it be in Riyadh, Saudi Arabia?

6 pm