

# SPARQL Questions for Mars RDF Data

## Easy Questions

1. What is the escape velocity of Mars, and how does it compare to the speed of sound (340 m/s)?

SPARQL Query:

```
SELECT ?escapeVelocity
WHERE {
    <http://example.org/planet/Mars>
    <http://example.org/hasEscapeVelocity> ?escapeVelocity.
}
```

2. How many moons does Mars have?

SPARQL Query:

```
SELECT ?numberOfMoons
WHERE {
    <http://example.org/planet/Mars>
    <http://example.org/hasNumberOfMoons> ?numberOfMoons.
}
```

3. Does Mars have a global magnetic field?

SPARQL Query:

```
SELECT ?globalMagneticField
WHERE {
    <http://example.org/planet/Mars>
    <http://example.org/hasGlobalMagneticField> ?globalMagneticField.
}
```

## Medium Questions

### 1. What are the atmospheric composition and mean surface temperature of Mars?

SPARQL Query:

```
SELECT ?composition ?meanTemperature

WHERE {

    <http://example.org/planet/Mars>

    <http://example.org/hasAtmosphericComposition> ?composition;

    <http://example.org/hasMeanTemperature> ?meanTemperature.

}
```

### 2. What is the mass and diameter of Mars, and what does that tell us about its density?

SPARQL Query:

```
SELECT ?mass ?diameter

WHERE {

    <http://example.org/planet/Mars> <http://example.org/hasMass> ?mass;

    <http://example.org/hasDiameter>

    ?diameter.

}
```

### 3. What is the surface gravity of Mars, and how does it compare to Earth's (9.8 m/s²)?

SPARQL Query:

```
SELECT ?surfaceGravity

WHERE {

    <http://example.org/planet/Mars>

    <http://example.org/hasSurfaceGravity> ?surfaceGravity.

}
```

## Difficult Questions

1. What is the range of Mars' surface temperature? How does it vary from the poles to the equator?

SPARQL Query:

```
SELECT ?temperatureRange

WHERE {

    <http://example.org/planet/Mars>

    <http://example.org/hasSurfaceTemperature> ?temperatureRange.

}
```

2. Retrieve all features and atmospheric properties of Mars and summarize what makes it unique.

SPARQL Query:

```
SELECT ?features ?atmosphere

WHERE {

    <http://example.org/planet/Mars>

    <http://example.org/hasSurfaceFeatures> ?features;

    <http://example.org/hasAtmosphericComposition> ?atmosphere.

}
```

3. List all RDF triples describing Mars. Can you identify which data is missing?

SPARQL Query:

```
SELECT ?property ?value

WHERE {

    <http://example.org/planet/Mars> ?property ?value.

}
```