**Forces & Motion Unit**

1. What word defines the location of an object?
2. What is a reference point?
3. How can you define displacement?
4. How can you use the slope of a line to read a distance-time graph?
5. What does each distance-time graph show?



1. Draw your own distance time graph using the chart below: DON’T FORGET TO LABEL!

|  |  |
| --- | --- |
| Time | Distance |
| 0 | 0 |
| 1 | 5 |
| 2 | 10 |
| 3 | 15 |
| 4 | 15 |
| 5 | 15 |
| 6 | 30 |
| 7 | 45 |



1. What is the formula for speed?
2. Calculate the speed of the following problems:
	1. A car travels 50m in 5 seconds, calculate its speed.
	2. A cheetah runs about 100m in 10 seconds, a leopard runs about 90m in 10 seconds, calculate both animal’s speed to determine which is faster.
	3. A dog runs 25m in 10 seconds, what is its speed?
3. Compare and contrast gravity and friction in the chart below:

|  |  |
| --- | --- |
| Gravity | Friction |
|  |  |
|  |  |
|  |  |
|  |  |

1. How are force and mass related?
2. Are the following forces balanced or unbalanced? Calculate Net force for each!
	1. 

5N 5N

* 1. 

5N 5N

* 1. 

5N 10N 5N

* 1. 

5N 10N 5N

1. What is the definition of inertia?
2. Give an example of inertia in the real world.

**Waves Unit**

1. What do waves carry?
2. What do waves need to transmit energy?
3. Do all waves need a medium?
4. Compare and contrast mechanical and electromagnetic waves in the chart below:

|  |  |
| --- | --- |
| Mechanical Waves | Electromagnetic Waves |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

1. Compare and contrast transverse and compressional waves in the chart below:

|  |  |
| --- | --- |
| Compressional Wave | Transverse wave |
|  |  |
|  |  |
|  |  |

1. Define the following terms:
	1. Frequency

* 1. Amplitude
	2. Wavelength

* 1. Speed
1. Define the following wave behaviors:
	1. Refraction

* 1. Reflection
	2. Transmission

		1. Transparent
		2. Translucent
		3. Opaque
	3. Absorption
1. Low frequency sounds are heard with a low \_\_\_\_\_\_\_\_\_\_.
2. High frequency sounds are heard with a high \_\_\_\_\_\_\_\_\_.
3. How does light travel through the eye? \_\_\_\_\_\_\_\_\_\_ 🡪 lens 🡪 \_\_\_\_\_\_\_\_\_\_\_ 🡪 optic nerve
4. What happens to color for us to see black?
5. What happens to color for us to see white?
6. What is happening when we see an object as blue?

**Astronomy Unit**

1. What is the part of the Sun that emits light?
2. The photosphere is the most prominent layer of the Sun’s atmosphere, what does prominent mean here?
3. What is the corona and when can it be seen?
4. Define the following terms:
	1. Sunspot
	2. Prominence
	3. Solar flare
5. What two things does the photosphere radiate?
6. What are the electrically charged particles that the corona sends out called?
7. Why don’t most solar winds reach Earth?
8. What three things can magnetic storms disrupt here on Earth?
9. What is based on 24 hours of Earth rotating?
10. What is based on 365 ¼ days of Earth revolving?
11. In your own words, tell me the difference between rotate and revolve.
12. Does the moon revolve or rotate or both? Explain.
13. Why do we see the same side of the moon all the time?
14. Label the 8 phases of the moon on the diagram below:



1. Label the sun, moon, earth and the type of eclipse shown below:

 

1. What are tides and what are they caused by?
2. Explain the difference between high and low tide.
3. Explain the difference between neap tides and spring tides.
4. What causes the different seasons?
5. Why does the number of daylight hours change throughout the year?
6. What is a solstice and when does it happen?
7. What is an equinox and when does it happen?
8. What is the force that pulls all objects in the universe?
9. More massive objects have a \_\_\_\_\_\_\_\_\_\_\_ pull on less massive objects.
10. The closer the distance between objects the \_\_\_\_\_\_\_\_\_\_\_\_ the pull.
11. How does the Sun affect spring tides and neap tides?
12. What is inertia?
13. What does elliptical orbit mean?
14. In the diagram below, compare mass and weight.

1. Explain each type of galaxy below:
	1. Spiral
	2. Elliptical
	3. Irregular
2. What are galaxies composed of?
3. What is a light-year and what is it used for?