

Study Guide

2nd Semester Final



Name	_____
Date	_____
Period	_____ Table _____

The example questions used in this study guide are illustrations of the type of information that will be asked on the final exam. The final exam will include **70 multiple-choice questions**. The final exam will have a value of **10% of your second semester grade**.

Part I: Astronomy

Earth Moon and Sun:

- Know what causes the seasons
- Be able to recognize the name of the season, the location where the Sun's rays strike Earth directly over-head, the beginning day for each, basic length of day at beginning of season
- Know how the "angle of insolation" affects the heating of the earth
- Know what causes a Lunar Eclipse (the Moon is caught in Earth's shadow)
- Know what causes a Solar Eclipse (the Moon cast a shadow on the Earth)
- Be able to recognize the Solar and Lunar Eclipse when shown diagrams of each
- Know what causes tides and the relationship between moon, earth and sun

Example Questions:

- 1) How long does it take the Earth to make one complete rotation on its axis? _____
- 2) How long does it take the Earth to make one complete revolution around the Sun?

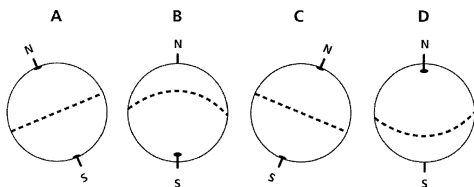
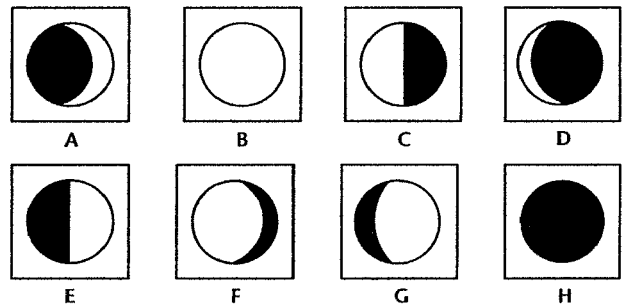
- 3) Seasons are caused by _____
- 4) Day and night are caused by _____
- 5) A solar eclipse occurs when _____
- 6) A lunar eclipse occurs when _____
- 7) Only one side of the moon is visible from Earth because _____

- 8) The moon was formed when _____

9) Label the Phases of the Moon:

- A) _____
- B) _____
- C) _____
- D) _____
- E) _____
- F) _____
- G) _____
- H) _____

The Phases of the Moon



10) The diagram shows the seasons in order A to D.

Label the seasons:

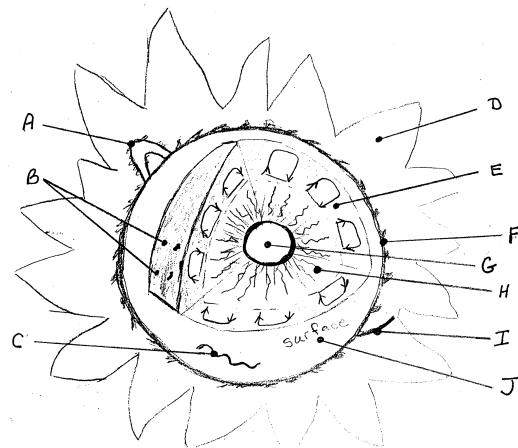
- A) _____
- B) _____
- C) _____
- D) _____

The Solar System:

- Be able to distinguish between geocentric (Ptolemy) and heliocentric (Copernicus)
- Know the 3 layers of the sun's atmosphere and the 3 layers of the sun's interior
- Be able to identify these layers by function, description, and diagram
- Be able to list the 8 planets in order of **size** and in order of **distance** from the sun.
- Know the similarities/differences between the inner and outer planets
- Know the special unique features of each planet

Example Questions:

- 1) The process of producing energy in the Sun's interior? _____
- 2) The sun's 3 interior layers are: _____
- 3) The sun's 3 atmospheric (outer) layers are _____
- 4) Name the planet with the following features:
 - a) _____ has a 90° rotational tilt
 - b) _____ is the hottest planet
 - c) _____ has a giant red spot and is the largest
 - d) _____ is the only planet known to have liquid water
- 5) Give the reason why planets are able to be seen: _____
- 6) Most stars seem to move across the night sky because of Earth's _____
- 7) Give the letter for each feature of the Sun:
 - 1) _____ Photosphere
 - 2) _____ Chromosphere
 - 3) _____ Corona
 - 4) _____ Core
 - 5) _____ Radiation Zone
 - 6) _____ Convection Zone
 - 7) _____ Solar Flare
 - 8) _____ Solar Prominence
 - 9) _____ Sun Spots
 - 10) _____ Filament



Stars, Galaxies, & the Universe:

- Be able to identify the stages in the life of a star having the mass similar to our sun
- Know that the H-R diagram is based on absolute brightness and temperature
- Be able to interpret the H-R diagram (refer to worksheets on the H-R diagram)
- Know that galaxies are categorized by shape. The 3 basic types are: spiral, elliptical, irregular

Example Questions:

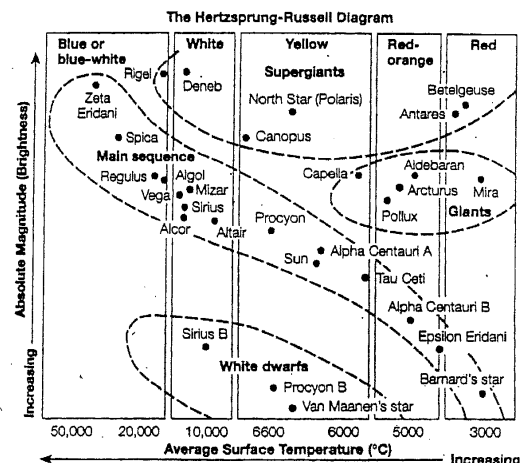
- 1) What unit is used to measure distances within the solar system? _____
- 2) What unit is used to measure distances to other stars? _____
- 3) What measurement could be made to measure a star's distance from Earth? _____
- 4) A star's life cycle (how a star lives) is determined by its: _____
- 5) The color of a star can be determined by knowing its: _____
- 6) An exploding star is called a _____
- 7) Put the following in order of smallest to largest: galaxy, planet, solar system, star, universe

- 8) Put the following in order of first occurring to last occurring:
black dwarf, fusion, main sequence, nebula, planetary nebula, proto-star, red giant, white dwarf

- 9) Our star and its planets and their moons are collectively called: _____
- 10) A huge star group rotating around a common center is called: _____
- 11) The tail of a comet always points _____
- 12) Star A has a red Doppler shift. Star A is moving _____ the Earth.
- 13) The theory which might explain the origin of the universe is called the: _____

Use the H-R diagram to answer the following:

- 14) _____ Color of Deneb
- 15) _____ Color of coolest stars
- 16) _____ Rigel's category
- 17) _____ Most stars are located here
- 18) _____ Temperature of Mira
- 19) _____ These are hot but not very luminous



Part II: Force and Motion

Motion and Energy:

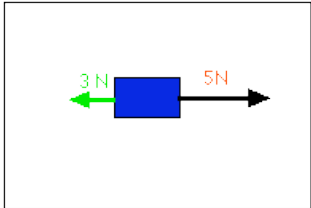
- Be able to use formulas and calculate word problems for the following: (use correct units)
average speed speed slope potential energy
acceleration velocity displacement kinetic energy
- Know that changes in velocity may be due to changes in speed, change in direction, or both
- Know that acceleration includes a change in speed and/or a change in direction
- Be able to determine the slope of a line on a distance-versus-time graph (Slope = Rise/Run)

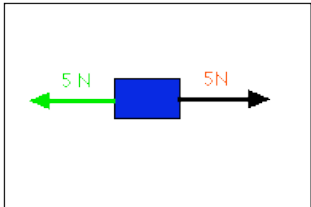
Example Questions:

- 1) Speed equals distance divided by _____
 - 2) The difference between speed and velocity is that velocity includes: _____
 - 3) The rate at which velocity changes is called: _____
 - 4) When you accelerate, you can: _____, _____, or _____
 - 5) Is an object moving at a constant speed in a circle accelerating? _____
 - 6) A car travels 50 km in 5 hours. What is the average speed of the car? _____
 - 7) Which has greater speed, a hawk that travels 600 m in 60 sec or a swallow that travels 60 m in 5 sec?
(Show Your Work)
 - 8) What is a vector and what do its parts represent? _____

 - 9) How can two objects traveling at the same speed have different velocities? _____

 - 10) What is the net force in the diagrams to the right?
A) _____
-
B) _____
- A


- B



11) When two forces act in the same direction, you _____ to get the net force.

12) Forces can only be added together if they are _____

Force and Motion:

- Be able to use formulas and calculate word problems for the following: (use correct units)
forces momentum weight
- Be able to identify the units used for the following:
acceleration distance gravity force mass
speed time weight Newton momentum
- Know the difference between balanced and unbalanced forces and how they affect motion
- Know the four kinds of friction: static, rolling, sliding and fluid;
- be able to identify examples of each
- Know Newton's 3 Laws of Motion and be able to identify which Law is represented when given either examples or descriptions

Example Questions:

- 1) We can increase acceleration by _____ the force or by _____ the mass.
- 2) We can determine the momentum of an object by multiplying an object's: _____ and _____
- 3) The strength of a frictional force depends on _____ and _____
- 4) The force of _____ is the only force acting in free fall.
- 5) An object tends to remain in motion or at rest due to its _____
- 6) Near the surface of the Earth, acceleration due to gravity is _____ m/sec/sec
- 7) A tennis ball and bowling ball are dropped from a cliff, if there were no air resistance, which would hit the ground first?
- 8) A person can lay on a bed of nails with no pain because _____
- 9) What would we do to increase the friction on an icy roadway? _____
- 10) The illustration shows a 500 kg dancing cow.
What is the force of the floor pushing back on the cow?

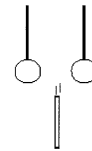


Forces in Fluids:

- Be able to apply simple mathematical relationships to determine a missing quantity when given the two remaining terms:
 $\text{Speed} = \text{distance}/\text{time}$ $\text{density} = \text{mass}/\text{volume}$ $\text{force} = \text{pressure} \times \text{area}$
- Know how to predict whether an object will float or sink
- Know the concepts behind Archimedes' principle, Pascal's principle, and Bernoulli's principle

Example Questions:

- 1) Atmospheric pressure _____ as your elevation increases.
- 2) Water pressure _____ as depth increases.
- 3) The buoyant force acts in the direction opposite to the force of _____, so it makes an object feel _____.
- 4) When force is applied to a confined fluid, the change in pressure is transmitted _____ to all parts of the fluid.
- 5) Bernoulli's Principle states that as the speed of a moving fluid increases, the pressure exerted by the fluid _____.
- 6) Fluids can be which two states of matter? _____ and _____
- 7) If you blow between two ping-pong balls, the ping-pong balls will _____.
- 8) If you know the weight of an object that floats, you know the object's _____
- 9) An airplane has lift because the air is moving _____ over the top of the wing than under the bottom of the wing.



Familiar Formulas:

Formulas will be supplied on the Final when needed. You do not need to memorize formulas, but it will be necessary for you to know when and how to use these formulas.

$F = M \times A$	$Wt = M \times G$	$D = V \times T$	$Mo = M \times V$	$(V_f - V_i) = A \times T$
$M = F / A$	$M = Wt / G$	$V = D / T$	$M = Mo / V$	$A = (V_f - V_i) / T$
$A = F / M$	$G = Wt / M$	$T = D / V$	$V = Mo / M$	$T = (V_f - V_i) / A$
Force = N	Weight = N	Distance = m	Momentum	$(V_{\text{final}} - V_{\text{initial}})$
Mass = kg	Mass = kg	Speed = m/s	= kg-m/s	= m/s
Accel = m/s ²	Gravity = m/s ²	Time = s	Speed = m/s	Accel = m/s ²
	Newton = kg•m/s ²		Mass = kg	Time = s