Science 8
Research questions Unit 4
Topic 2 The Wheel and axle, gears, and pulleys
Name:
Date:

1.) Draw a simple machine that is a modified lever that is still able to draw a load over a longer distance? Page 285 (5 marks)

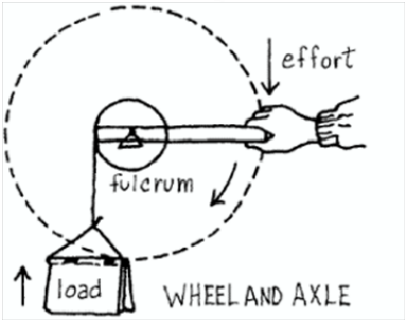
2.) define the following terms:
a.) winch:

b.) radius:

c.) wheel and axle

3.) What types of advantage can a wheel and axle provide to a moving a load? Speed advantage, effort advantage, or both?

4.) Look at the diagram below. Does this set up provide a speed or effort advantage?



5.) Draw and label a wheel and axle with a speed advantage? (label load, effort force, wheel, axle.

6.) define the following terms:
a.) gear:

b.) gear train:

c.) driving gear (driver):

d.) driven gear (follower)

e.) sprocket:

f.) speed ratio:

7.) In a gear train the smaller gear is called a pinion the larger gear is called a wheel. A large gear as the driving gear(driver) and a smaller gear, as the driven gear(follower), is a multiplying gear ratio train. It will increase the speed of the driven gear with greater effort
A small driving gear (driver) in contact with a larger driven gear (follower) make a reducing gear ratio it reduces the effort, but travels slower.

1. Draw and label a gear train that will increase the speed of the follower gear.1 mark

2. Label the wheel, pinion, driving (driver) and driven (follower). 4 marks
3. How many teeth would the pinion have to have, if the wheel had 20 teeth and you need a multiplying ratio of 4 1marks

8.)Define the following terms:
a.) pulley:

b.) fixed pulley:

c.) movable pulley:

d.) block and tackle:

e.) compound pulley:

9.) What is the mechanical advantage of a fixed pulley?

10.) Do Topic 2 Review Pg 295 Questions 1, 2, 3, 4