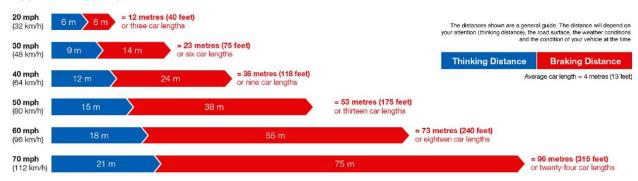# Friction Matters Homework

Name: _____ Date: _____

Definitions: Write your own definitions to each vocabulary word listed below.

Friction: _____

_____

Mass: _____

_____

Velocity: _____

_____

Force: _____

_____

Stopping Distance: _____

_____

Equations: Based off of the given equation, match the variables with their abbreviations.

$$d = \frac{v_0^2}{2\mu g}$$

d = _____

v = _____

μ= _____

g = _____

Discussion Questions: Use the space provided to answer the questions in complete sentences.

1. Explain how surface type influences the amount of friction.

_____

_____

_____

_____

_____

2. Analyze how friction can be both a positive and negative part of our everyday lives. Use examples to support your statements.

POSITIVE: _____

_____

_____

_____

NEGATIVE: _____

_____

_____

_____

3. Describe what a daily activity would be like if there were no friction. How would the activity be easier, and how would it be more difficult?

_____

_____

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Further Your Thinking: Consider the picture below when answering the question below.

Typical Stopping Distances

Speed	Thinking Distance	Braking Distance	Total
20 mph (32 km/h)	6 m	6 m	= 12 metres (40 feet) or three car lengths
30 mph (48 km/h)	9 m	14 m	= 23 metres (75 feet) or six car lengths
40 mph (64 km/h)	12 m	24 m	= 36 metres (118 feet) or nine car lengths
50 mph (80 km/h)	15 m	38 m	= 53 metres (175 feet) or thirteen car lengths
60 mph (96 km/h)	18 m	55 m	= 73 metres (240 feet) or eighteen car lengths
70 mph (112 km/h)	21 m	75 m	= 96 metres (315 feet) or twenty-four car lengths

The distances shown are a general guide. The distance will depend on your attention (thinking distance), the road surface, the weather conditions and the condition of your vehicle at the time

Average car length = 4 metres (13 feet)

1. How might reaction time influence your stopping distance?

   _____

   _____

   _____

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   _____

   _____

   _____

   _____

   _____