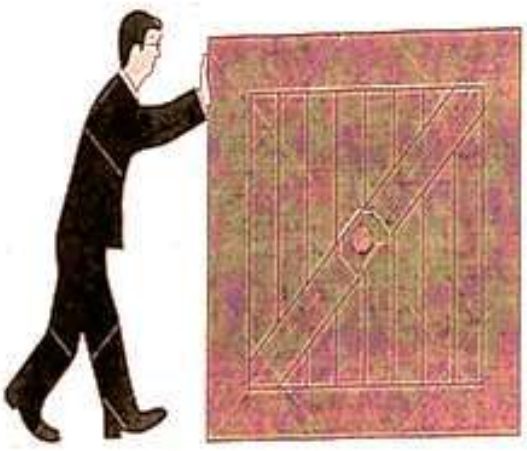
Topic: Forces and Motion Grade 6

Q1. Identify balance and unbalanced forces.

Mr. Thomas has to move heavy crate.



1. Draw arrows on the picture to show the direction of the forces acting on the crate.

2. The crate exerts a bigger force than Mr. Thomson exerts. Will the crate move.

_____

3. Mr. Thomson's friend comes to help him push the crate. In what way do you think the movement of the crate will change when there are two people pushing it. Explain your answer.

_____

4. When will the forces acting on the crate be equal?

_____

5. Which force must be bigger in order for the crate to move forward.

_____

Q2(a). Ahsan's mass on Earth is 45 kg, what will be his mass on moon?

_____

(b). Ahsan's sister Maria is saying that her weight will change if she travels to planet X, Is her statement correct?

_____

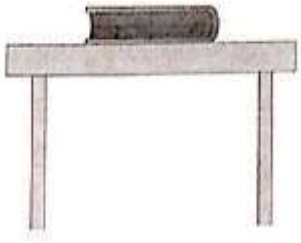
(c) If Maria's weight on Earth is 70 N, what will be her weight on planet X?

_____

Q3. Which of the following are examples of balanced and unbalanced forces? Suggest by mentioning balance and unbalance under each of the picture.

An aeroplane taking off

_____

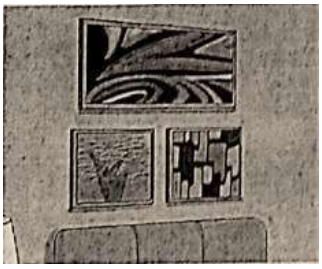


A book resting on table

_____

Kicking a football

_____



Picture hanging on a wall

_____

Bike speeding up

_____

Boy standing still

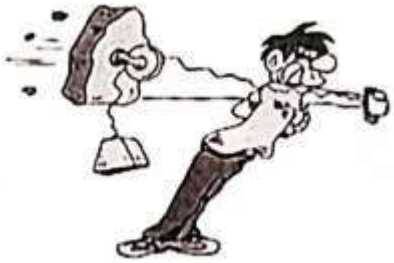
_____

Q4. Suggest what kind of forces are acting on the following pictures by mentioning push or pull under each of them.

_____

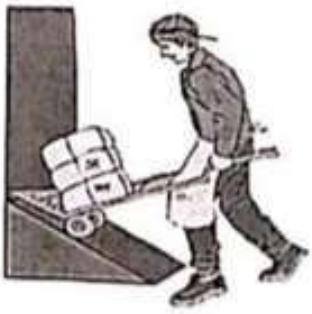
_____

_____



_____

_____



_____

1 (a). What is mass?

_____

(b) How is it measured?

_____

Q2 (a). What is weight?

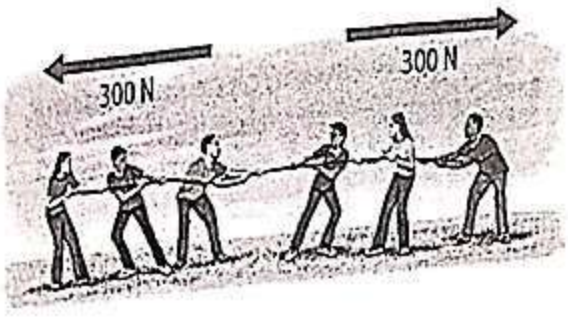
_____

(b). How is it measured?

_____

Forces and Motion Homework sheet

Q1. Circle the best answer.

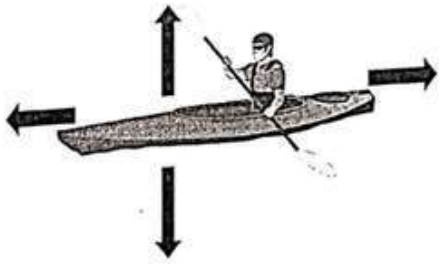


a) The forces shown above are PUSHING/ PULLING forces.
b) The forces shown above are WORKING TOGETHER/ OPPOSITE FORCES.
c) The forces are EQUAL/ NOT EQUAL.
d) The forces Do/ DO NOT balance each other.
e) The net force Is 300N TO THE RIGHT/ 300N TO THE LEFT/ Zero.
f) There IS/ IS NO motion.

Q2. Label the forces on this Kayak.

Use the letters next to each phrase.

A	Forward force from the paddle
B	Water resistance
C	Gravity
D	Up thrust



Q3. Write whether each statement is **'True'** or '**False'**. (11)

Statement	True	False
a) Friction always slows things down.		
b) Cars need friction to keep moving.		
c) Cars need friction to Stop.		
d) You could not walk without friction.		
e) Matches light because of friction.		
f) Shoe laces stay tied up because of friction.		
g) You could not pick Up a cup of tea without friction.		
h) Snow increases the friction between your shoes and the ground.		
i) Friction is useful in playgrounds.		
j) Pencils do not need friction to write.		
k) There is less friction when you are roller skating.		

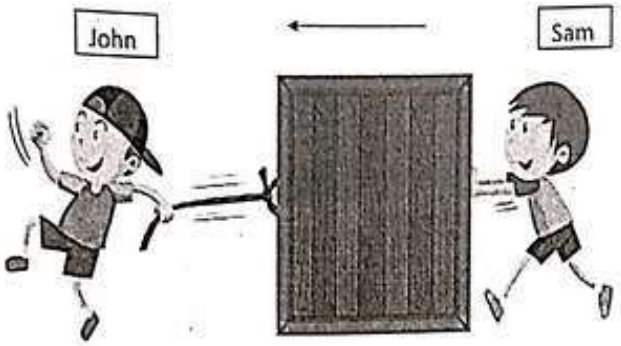
Q4. A ball is on the ground and Ahmad kicks the ball. [2]

Write two effects of forces acting on ball.

a) _____

b) _____

Q5. John is trying to move the crate to the left. [2]



(a) What sort of force is he using?

_____

(b) John is not able to move the crate on his own. He asks Sam for help.

What sort of force is Sam using from where he is positioned?

_____

Q6. Friction between a tyre and the road can wear down the tread to a dangerously low level. [6]

8 mm tread

worn tread

The tables show the stopping distances in metres for a car travelling at 15 metres per second (about 33 miles per hour) on wet and dry roads.

Wet Roads

Stopping distance in metres

Surface	New Tyres	Old Tyres
rough tarmac	13	23
smooth concrete	12	27
smooth asphalt	18	50

Dry Roads

Stopping distance in metres

Surface	New Tyres	Old Tyres
rough tarmac	18	14
smooth concrete	17	13
smooth asphalt	19	20

(a) What is the difference in the stopping distance between a new tyre and an old tyre on dry smooth concrete?

_____

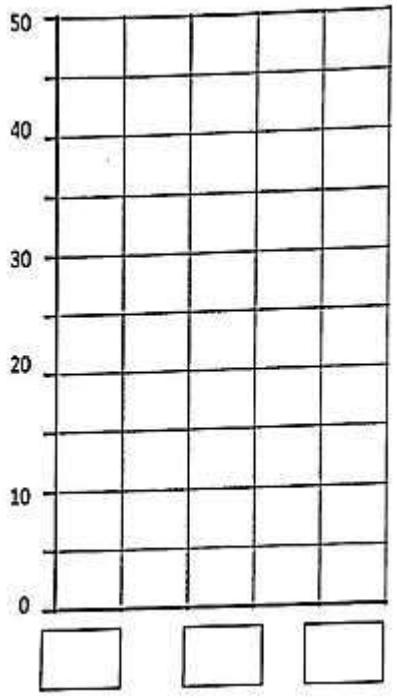
It is against the law in many countries to drive with a car tread less than 2mm deep.

(b) Explain whether the evidence in the tables supports this idea or not.

_____

_____

(c) Draw a bar graph to show the stopping distance in metres for each wet road surface for old tyres.



Road surface

d) For new tyres, both in the wet and dry conditions, which type of road surface is the safest?

_____