

Name _____

Teacher _____

Date _____

The picture shows what Rena saw on her stopwatch when she timed her brother running.

1. How much time does the stopwatch show?

Circle the best answer.

- a) 10 hours and 27 minutes
- b) 10 minutes and 27 seconds
- c) 10 seconds and 27 hundredths of a second
- d) 10 tenths of a second and 27 hundredths of a second

2. How should Rena write the time shown on the stopwatch?

Circle the best answer.

- a) 10.27 hours
- b) 10.27 minutes
- c) 10.27 seconds
- d) 10.27 hundredths of a second



Rena timed three friends rowing the same boat the same distance across a lake.

Jamie	Sam	Rachel
42 seconds	59 seconds	47 seconds

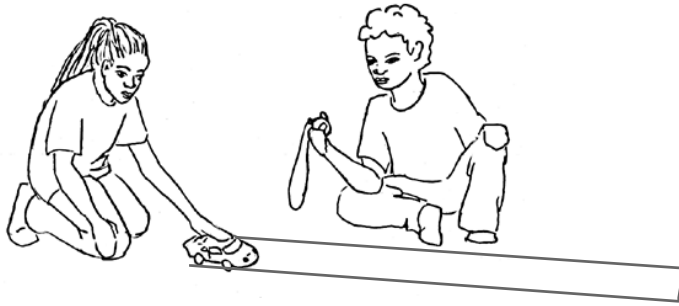
3. Who took the least amount of time ? *Circle the best answer.*

- a) Jamie
- b) Sam
- c) Rachel

4. The first time Rachel took 47 seconds to cross the lake. If she rowed again with the same force but used a bigger boat, how would her time compare? *Circle the best answer.*

- a) It would be slower because bigger boats are heavier.
- b) It would be faster because bigger boats can move faster.
- c) It would be the same because the distance across the lake did not change.
- d) There is no way to tell from the information given.

Jada gave her toy car a push on a track to see how fast it would go. Jamal timed how long the car took to get to the end of the track. The table shows their data.



Trials	Time (seconds)
1	10
2	20
3	The car did not get to the end of the track
4	15

the car to reach the end of the track?

Circle the best answer.

- a) 10 seconds
- b) 15 seconds
- c) 20 seconds
- d) The car did not get to the end of the track.

5. In Trial 1, how much time did it take

6. In which trial did the car travel the fastest? *Circle the best answer.*

- a) Trial 1
- b) Trial 2
- c) Trial 3
- d) Trial 4

7. In Trial 3, why do you think the car did not get to the end of the track?

Circle the best answer.

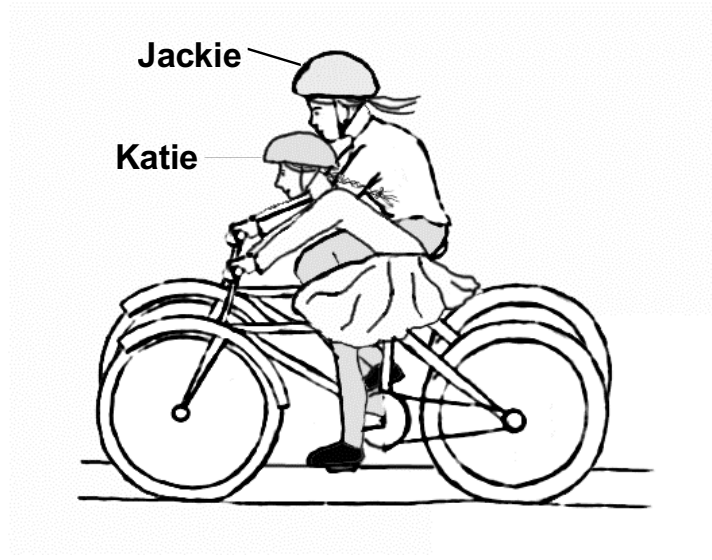
- a) Jada did not push the car when Jamal said to.
- b) Jada took the rubber tires off the wheels.
- c) Jada started the car differently.
- d) Jada used too little force on the car.

8. Jamal wanted to do more trials. Why should Jada agree?

You can circle more than one answer.

- a) Because Jamal needs more practice with the stopwatch.
- b) Because the times were not yet close enough.
- c) Because in one of the trials, the car did not get to the end of the track.
- d) Because the times were not yet fast enough.

The drawing shows Jackie and her little sister Katie on their bikes. Jackie is much heavier than her sister Katie.

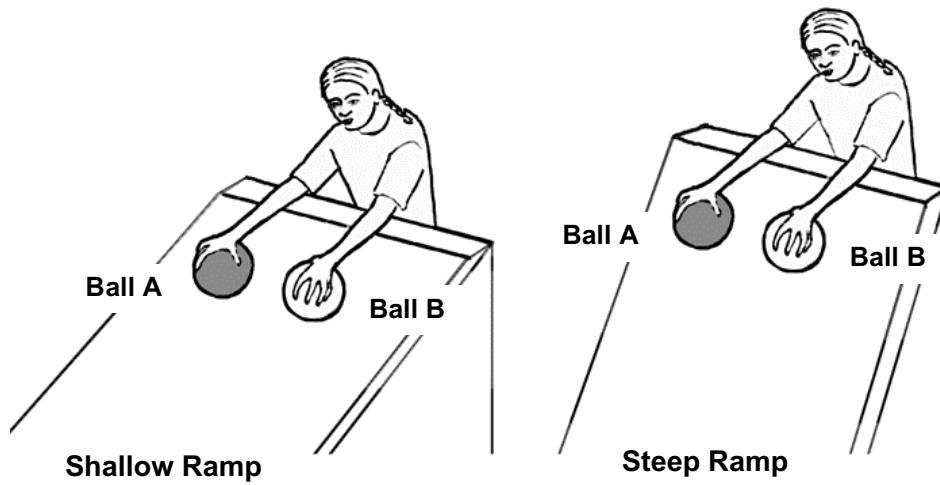


9. If they race their bikes along a flat sidewalk, who will win? *Circle the best answer.*
- a) Jackie will win because she can pedal with more force and go faster.
 - b) Katie will win because Jackie's greater mass will slow Jackie down.
 - c) It depends on how much force Jackie can pedal with to make up for her larger mass.
 - d) They will tie because their different masses and different pedaling force will have opposite effects.
10. How does **mass** affect the way something moves? *Circle the best answer.*
- a) Greater mass always slows down an object.
 - b) Greater mass sometimes slows down an object.
 - c) Greater mass always speeds up an object.
 - d) Greater mass sometimes speeds up an object.
11. How does **force** affect the way something moves? *Circle the best answer.*
- a) Greater force always slows down an object.
 - b) Greater force sometimes slows down an object.
 - c) Greater force always speeds up an object.
 - d) Greater force sometimes speeds up an object.

The drawing shows balls of exactly the same size at the top of two ramps.

Ball A, the darker one, is much heavier than **Ball B**.

One ramp is raised a little bit; it is **shallow**. The other ramp is raised much higher; it is **steep**.



12. How does the force on **Ball A** on the *shallow ramp* compare to the force on **Ball A** on the *steep ramp*? *Circle the best answer.*

- a) The force on Ball A is greater on the shallow ramp.
- b) The force on Ball A is greater on the steep ramp.
- c) The force on Ball A is the same on each ramp.

13. On the steep ramp, how does the force on **Ball A** compare to the force on **Ball B**? *Circle the best answer.*

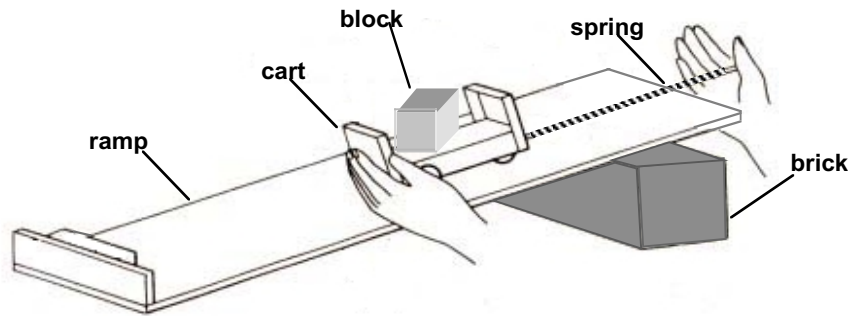
- a) There is more force on Ball A.
- b) There is more force on Ball B.
- c) There is the same amount of force on each ball.

14. On the steep ramp, which ball will get to the end *sooner*? *Circle the best answer.*

- a) Ball A
- b) Ball B
- c) They will both take the same amount of time.

Describe the reason for your answer.

Jack attached a 10 cm spring to the back of a cart. When he put the cart on a ramp, the spring measured 9 cm.



15. How could this have happened? *You may circle more than one answer.*
- a) Jack didn't put the cart in the right place on the ramp before he measured.
 - b) Jack didn't put the spring in the right place on the ramp before he measured.
 - c) Jack pulled on the cart when he measured the spring.
 - d) Jack did not hold the spring straight when he measured.
16. Jack tried it again, and the spring measured 11 cm.
 What does the stretch of the spring tell Jack? *Circle the best answer.*
- a) There was force on the cart.
 - b) The height of the ramp.
 - c) Springs get longer on ramps.

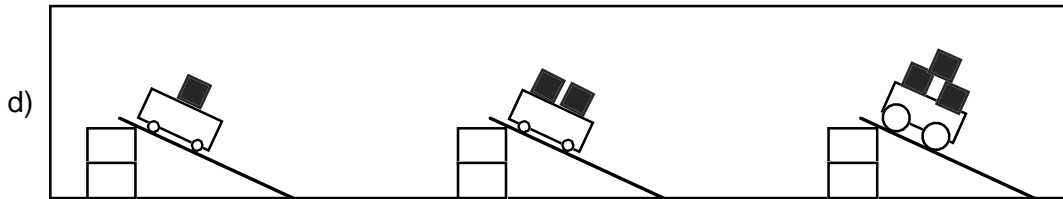
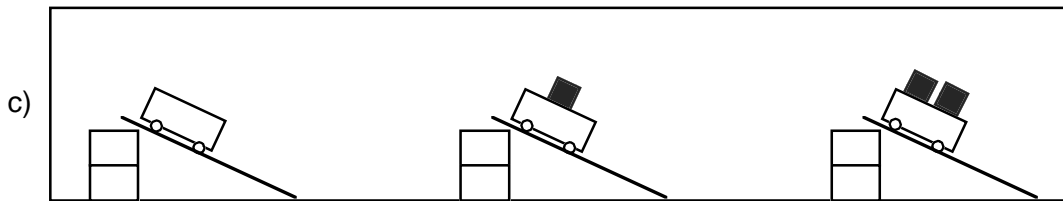
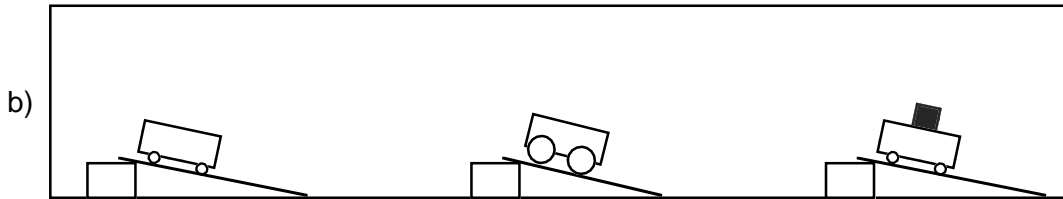
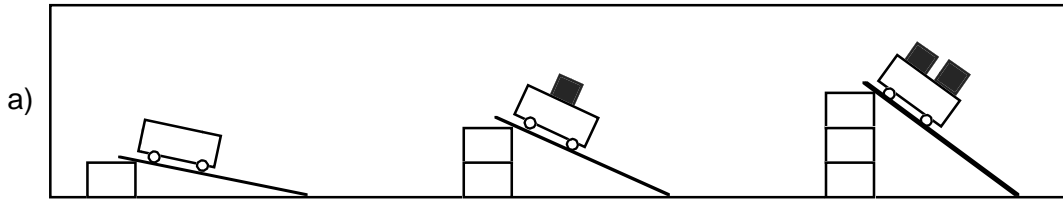
Jack put blocks on the cart and measured the length of the spring. Each time Jack added another block to the cart, the spring stretched more. Here are the results:

Mass on Cart (number of blocks)	Spring length
0	11 cm
1	12 cm
2	13.1 cm
3	14.2 cm

17. Why did the spring stretch more each time blocks were added? *Circle the best answer.*
- a) There was more force on the spring.
 - b) The cart had more mass each time.
 - c) There was more force and mass on the cart.
 - d) The force of gravity was more each time.

Abdul had some carts and some blocks. The blocks were all the same mass. He wanted to test the idea that **A heavier cart goes down a ramp faster.**

18. Which set-up should he use to test this idea? *Circle the best answer.*



Describe the reason for your answer.
