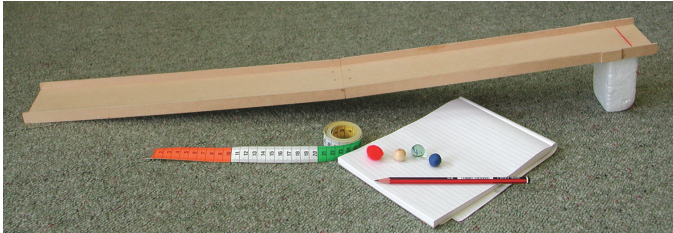


Task: Runaway

Approach:	Team	Year:	4 & 8
Focus:	Motion and resistance to motion		
Resources:	Wooden slide, support for high end, glass marble, wooden bead, ball of plasticine, small pom pom, lump of plasticine, notepaper, pencil, tape measure, team answer sheet		

Questions / instructions:

Preparation: Set up board on the floor and place objects, tape measure and note paper in front of it.



In this activity you will be finding out which of these objects rolls the furthest. Here are the objects you will be testing.

Hand out answer sheet and pencil.

Don't roll the objects yet, but look at them and discuss which one you think will roll the furthest. On the answer sheet, write number 1 in the box beside the object you think will go the furthest. Then write down number 2 for the object that you think will be second, and so on.

Allow time.

Order: marble, bead, plasticine, pompom
marble, bead, pompom, plasticine

Point to the order they have ranked the objects.

1. Explain the reason why you have put the objects in this order.

how evenly round (*spherical*) the object is
how hard the surface of the object is
how sticky or non-sticky the surface of the object is
how heavy the object is

How well do the reasons given fit the predicted order:

(whether or not the reasons are valid) well
moderately well
poorly

2. How could you work out which one rolls the furthest?

Now I would like you to talk together in your group to plan a test to find out which one goes the furthest. Listen to each other's ideas. You will need to design your test so that if another group did it the same way they would get the same answer. Talk together about how you will design your test, then I'll ask you to explain your ideas to me.

Allow time.

Commentary:

Compared to year 4 teams, year 8 teams were substantially better at thinking about desirable planning features (except recording). Only three percent of year 4 teams and 27 percent of year 8 teams used replication to check and confirm their results.

Runaway – Team Answer Sheet	
1. Before testing	
OBJECTS	ORDER FROM SHORTEST TO LONGEST DISTANCE
Marble	
Pom pom	
Plasticine ball	
Wooden Bead	
2. The results from the test	
OBJECTS	ORDER FROM SHORTEST TO LONGEST DISTANCE
Marble	
Pom pom	
Plasticine ball	
Wooden Bead	

3. Explain to me how you will do your test.

Planning features: keep ramp and floor the same
each object started at same point on ramp
each object started the same way (*released, not pushed*)
each object tried at least twice (*replication*)
distance to finishing point measured in consistent way
results to be recorded systematically

4. Now explain to me why you think another group would get the same answer if they used your test.

well argued
moderately well argued
poorly argued

Now you can do your test.

Allow time.

Write your results on the answer sheet.

Conduct of experiment:

ramp and floor kept constant
each object started at same point on ramp
each object launched same way (*released, not pushed*)
each object tried at least twice (*replication*)
distance to finishing point measured in consistent way
results systematically recorded

Now I would like you to change the shape of this piece of plasticine so that it doesn't roll as far as the ball of plasticine but rolls further than the pom pom.

5. What did you do to the plasticine to make it roll further than the pom pom but not as far as the first ball of plasticine?

made lump more nearly spherical (*or cylindrical*) but less so than plasticine ball
made into sphere, but added dents or bumps to slow it down

Participation in team:

all members substantially involved
one member largely not involved
two or more members largely not involved

Total score:

18–22
15–17
12–14
9–11
0–8

% responses	
y4	y8
4	29
42	72
22	45
1	18
60	82
26	25
4	27
27	39
69	34
86	96
85	98
55	83
3	27
52	87
53	81
86	91
11	15
80	78
18	21
2	1
0	10
12	39
33	30
33	17
22	4