Kidantics trac set

the intention with this product is to extend the child through building, discovery, exploration, encouraging experimentation and problem solving.

questions such as , what if ?, how can we ?, what do you think will happen when? can be used.

designed to complement the metric unit blocks that are in many pre-schools. trac sets extend the uses of unit blocks as the trac dimensions are based on the unit blocs, they fit each other well.

tracs perform two functions, they can be used as a toy and children can push cars and balls along

or as the later pages explain they can be used to build and outline basic physics

which ever way they are used, they are a great resource

as a footnote, whilst the tracs are great on the floor if you want to achieve or enhance there impact, raise them. Use tables or with Kidantics hollow blocks.

kidantics

toys with a twist

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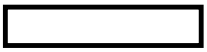
trac set pieces

your set should include the following

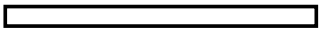
1 large hollow oblong
the biggest piece

2 ramps angular pieces

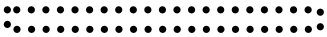
2 small hollow oblongs



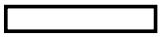
1 long flat board



1 long flat board with 3 grooves on the reverse side



3 short flat boards



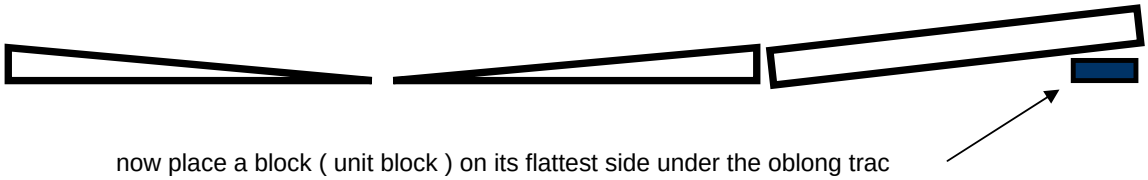
1 short flat board with 1 length ways groove on the reverse side

11 pieces in total

lay out the tracs as shown above
- the largest oblong to the right
- then the ramps to the left

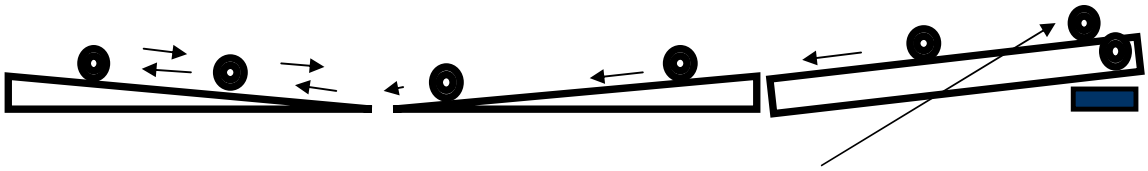
all pieces should be flat to the ground - i.e. nothing underneath them

this allows children to place cars and balls on the ramps and the only momentum they achieve is from them pushing the object



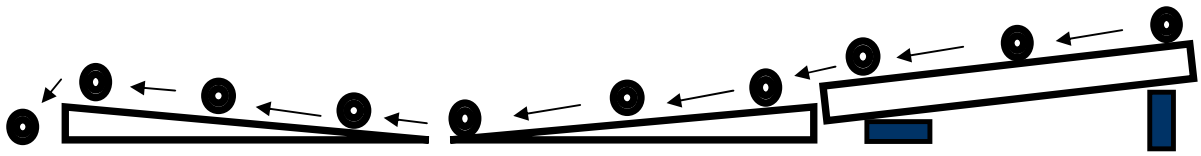
now place a block (unit block) on its flattest side under the oblong trac

place a ball at the high point on the oblong trac - then let go



all things being equal i.e. the floor is flat the ball will roll only up to the mid point on the second ramp

now remove the oblong track and place a block , on its flattest side beside the first ramp
turn the original block on its edge
place the oblong track on these two blocks as shown in the picture



now place the ball at the highest point and let go

what should have happened is that the ball should have traveled down the oblong, down the first ramp and continued up over the second and carried on till it has fallen off the end.

what has been demonstrated is that height creates speed and speed creates distance

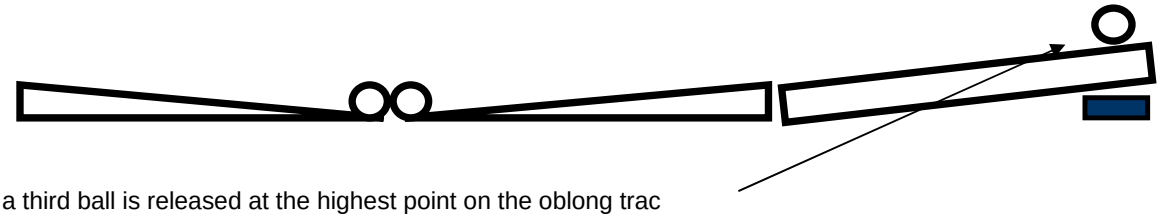
- you can vary this by using different size balls, and raise questions as to distance different balls achieve, the speed different balls achieve.
- raise the oblong and explore what effect this has on speed

- speed can be measured by stop watch, or having the children count the time it takes for the ball to travel.

an above age term but this concept can be introduced here

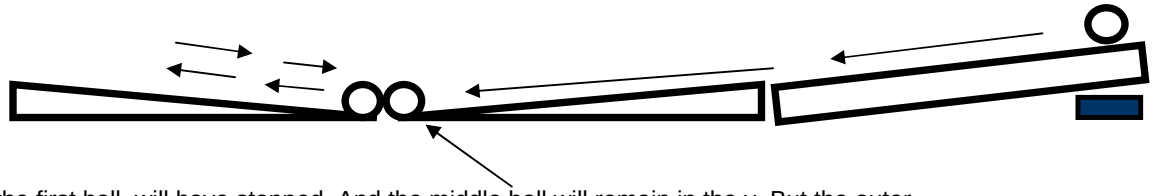
again lay the tracs out as before i.e. the oblong supported by a block on its edge and a second block on the flat under the oblong

now place two balls in the v of the tracks



a third ball is released at the highest point on the oblong trac

what should happen is that the third ball has traveled down the oblong and down the first ramp and crashed into the two balls in the v



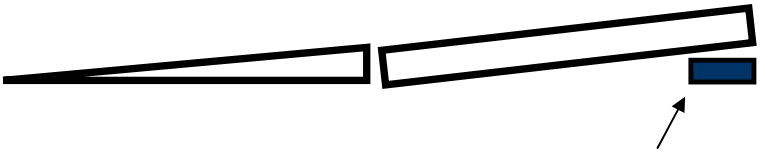
the first ball will have stopped. And the middle ball will remain in the v. But the outer ball should have traveled someway up the second ramp before returning to the v.

what has been demonstrated is that the force created by the movement of the first ball has been transferred from it through the second ball and into the third ball, causing it to move

now whilst I admit the physics theory that I behind this will be above the children, a physics teacher in later years will be thankful for it.

this experiment can be varied by using more balls. Is the momentum lessened. Measure this by placing a marker beside the furthest point.

set the trac set up with the large oblong and one ramp



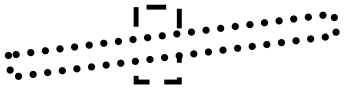
place a bloc under the oblong, under the end nod of the oblong that is furthest away from the ramp i.e. the opposite end

now bring the section of trac that has three grooves under it

and the small section of trac that has one groove under it.

using a pencil or piece of dowel place the pencil in the groove in the smallest trac

place this trac groove/pencil side up



now let the child place the second trac (the one with the three grooves in it) on top of the pencil. Obviously the middle groove is the point of balance but let the child discover this.

Once the child has discovered the balance point move the three pieces (small, large trac and pencil between) onto the end of the ramp

the set up should look like the picture below

you can add more trac to the raised end (as in picture)

now place a ball on the highest point of the oblong and let go.

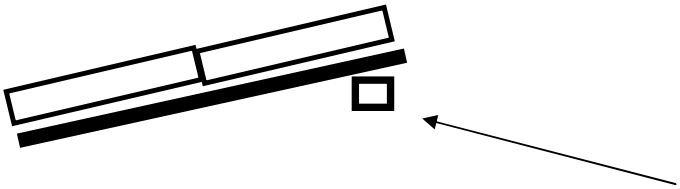
the ball should travel down the oblong, down the ramp and up over the raised trac and then the weight of the ball will make the trac bend down and the ball will travel on. If there is a hiccup in this move the loose trac (flat trac) just slightly away from the edge of the ramp , this will avoid any possible catching.

- for me the slower the ball traveled the more dramatic the tilt on the seesaw but kids may like the speed

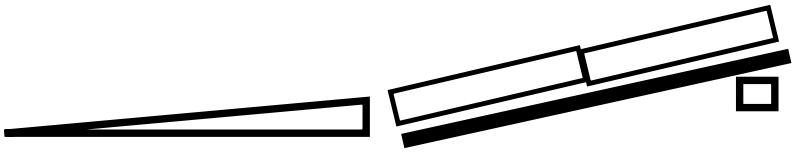
incidentally the fulcrum part of this trac set came into being was at a request of a primary school principal.

using the two smallest oblongs tracs place them behind the one another

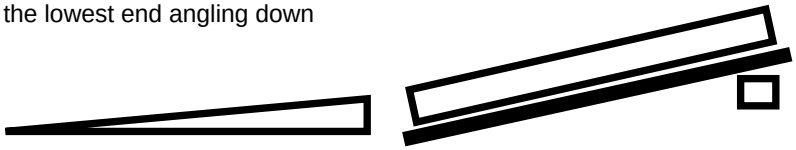
use a unit bloc to support the length of these two oblongs



use another unit bloc at right angles under the first unit bloc to raise one end

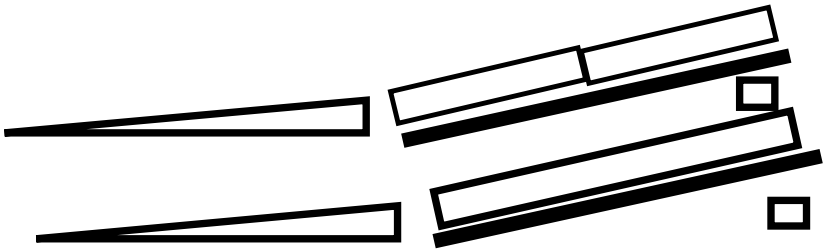


place a ramp at the lowest end angling down

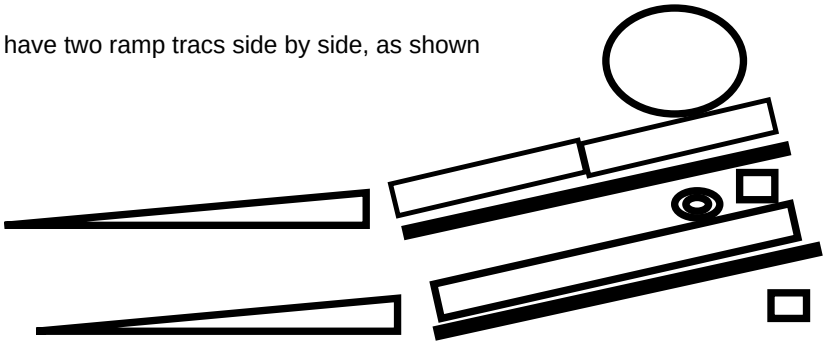


place the largest oblong and one ramp end on
place another unit bloc under the large oblong trac
place a bloc on its flattest side at right angles under the oblong end at the opposite end to the ramp end

now place the second ramp along side the first but allow a little distance apart



you should now have two ramp tracs side by side, as shown



again as the picture shows you should now be able to place two different sized balls along side each other which are at the same height. Now let the balls go.

the experiment is to demonstrate what happens if different sizes travel the same path do they travel as far. If not why not. Do they travel at the same speed.

we have used balls that range from golf balls to footballs (soccer)