
Assignment – Activity 1

Observe your classmate's movements or try it yourselves. What rule can you find? Please discuss your findings.

Discussion:

Question 1:

How the height of the shadow depends on the height of your hand?

Question 2:

How the height of your hand determines the height of the shadow?

Question 3:

Why the shadow of the hand moves in a strange way?

Question 4:

How the position of the shadow depends on the position of the mosquito?

Question 5:

How the position of the mosquito determines the position of the shadow?

Question 6:

How to find the correct position of the bulb?

Question 7:

How many times bigger the shadow is than the tree?

Question 8:

How the length of the shadow depends on the length of the cardboard model?

Question 9:

How the size of the shadow changes when you move the spotlight?

Question 10:

What a nomogram mean for you?

Question 11:

What is the rule that makes the arrow green?

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Assignment – Activity 2

Observe your classmate's movements or try it yourselves. What rule can you find? Please complete the following sentence.

Findings:

Task 1:

When left hand/point move _____ (upward/downward), right hand/point have to move (upward/downward) to keep the arrow green. When the arrows keeping green, the speeds of left hand and right hand are _____ (same/different).

Task 2:

When left hand/point move _____ (upward/downward), right hand/point have to move (upward/downward) to keep the arrow green. When the arrows keeping green, the speeds of left hand and right hand are _____ (same/different).

Assignment – Activity 3

Observe your classmate's movements or try it yourselves. What rule can you find? Please complete the following sentence.

Findings:

Task 3:

When left hand/point move _____ (upward/downward), right hand/point have to move (upward/downward) to keep the arrow green. When the arrows keeping green, the speeds of left hand and right hand are _____ (same/different).

Task 4:

When left hand/point move _____ (upward/downward), right hand/point have to move (upward/downward) to keep the arrow green. When the arrows keeping green, the speeds of left hand and right hand are _____ (same/different).

Summary (optional):

For proportional function $y=kx$, when $k=1$, two hands/points move toward same direction with the same speed; when $k=-1$, two hands/points move toward different directions with the same speed; when $k>0$ and $\neq 1$, two hands/points move toward same direction with different speeds (depend on the value of k); when $k<0$ and $\neq -1$, two hands/points move toward different directions with different speeds (depend on the value of k).

Assignment – Activity 4

Observe your classmate's movements or try it yourselves. Please graph the nomogram of given function.

Task 5:



Task 6:



Task 7:



Assignment – Activity 5

Observe your classmate's movements or try it yourselves. Please graph the function of given nomogram.

