

Before we start, any questions, concerns or comments
on how the course is designed and presented?

final word on exams:
I know it now exams™

<http://virtuallaboratory.colorado.edu/Biofundamentals-coreBIO/>

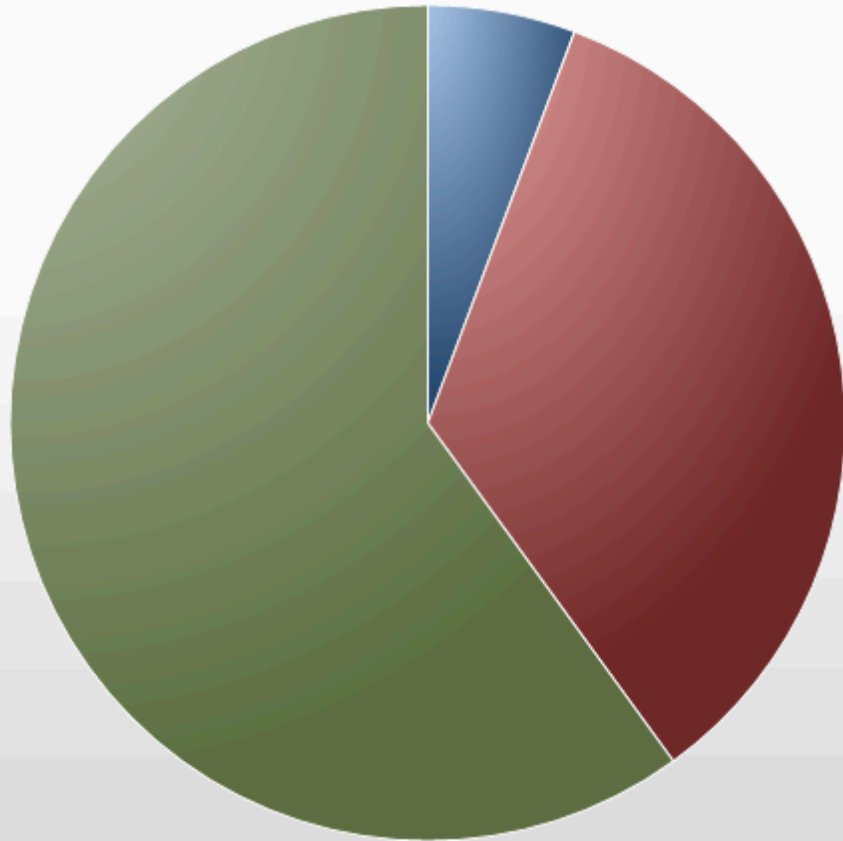
comments from NB page 7 to 19

preface page 1-12: Tamar + Keegan

Why are you taking this course?

(pick single best response)

- ☐ it is required (I have to)
- ☐ I am interested (I want to)
- ☒ Both (required + interested)
- ☐ confused (where am I)?

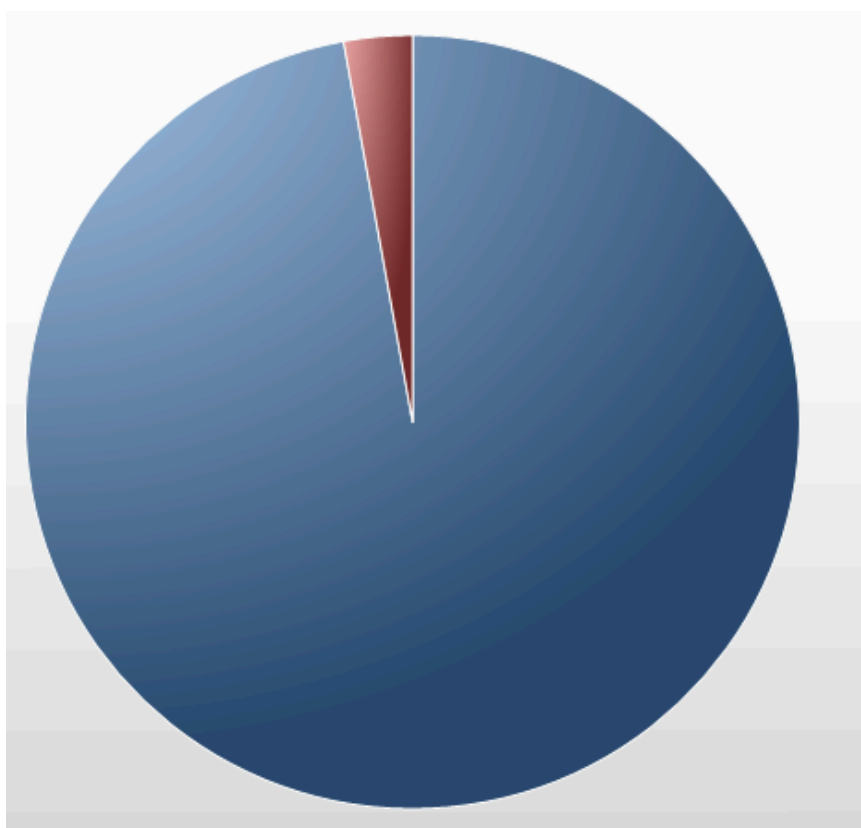


- it is required (I have to)
- I am interested (I want to)
- Both (required + interested)

Given my background, I suspect that this course

- ☐ will be too easy for me
- ☒ may be a challenge for me, but I expect to succeed
- ☐ may be a waste of time

page 1 of 7



■ may be a challenge for me, but I expect to succeed
■ may be a waste of time

Table discussion: What two to three scientific ideas do you find difficult to accept and why?

We use a socratic approach to teaching and learning - when we ask questions of you, or you ask questions of yourself (or us), you need to state as clearly as you can what you are assuming to be true, and if you are confused, where that confusion is coming from.

Almost the entirety of physics, at the time I was learning I did not know calculus so that played a major role in that but conceptually I struggled as well and I think this was due to a lack of visual explanations.

I can't think of any super specific concepts right now but in the past I have had trouble explaining processes (especially when I have to explain it in a test or a lab write up). For example I might find it hard to explain a process of what exactly happens in a positive feedback loop or something like that.

If you have concerns about the course, please let let Prof. K and/or your LAs know about them – we will do our best to address them.

page 2 of 7

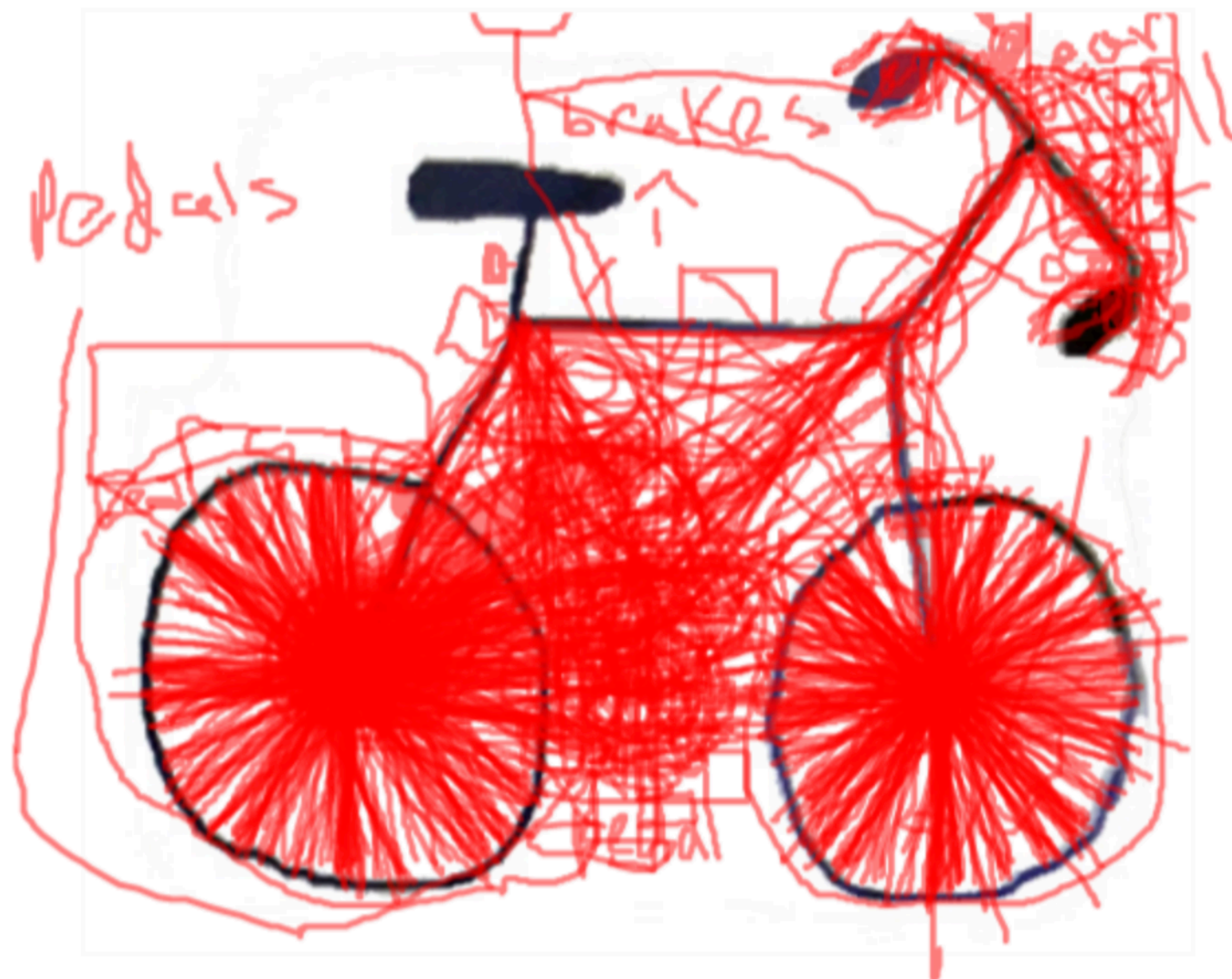
It is helpful for us to discover somethings about how you think. This and the next exercise can help us. Please fill in the missing parts of the bicycle.



Draw Erase Reset

page 3 of 7

It is helpful for us to discover somethings about how you think. This and the next exercise can help us. Please fill in the missing parts of the bicycle.

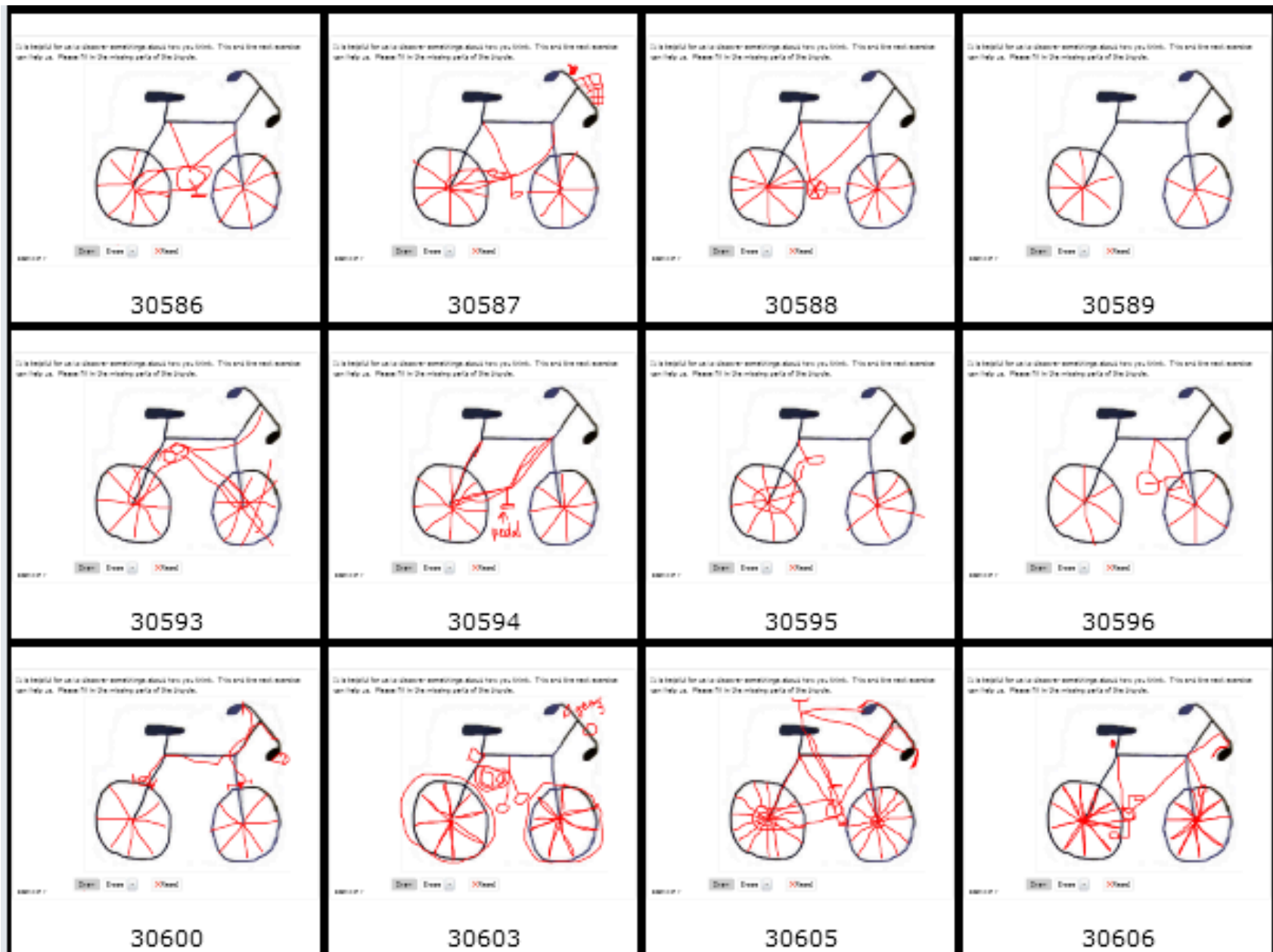


Draw

Erase



✖ Reset



The diagram shows a rock attached by a rope to a person (at the center) who is spinning it around their head. Draw how you think the the rock will move if the person lets go of the rope

What ideas did you use in your answer?



Draw

Erase



✖ Reset

page 4 of 7

The diagram shows a rock attached by a rope to a person (at the center) who is spinning it around their head. Draw how you think the the rock will move if the person lets go of the rope



What ideas did you use in your answer?

Draw

Erase

Reset

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

I was thinking that the rope would be going in the same direction if we were going at the point, but not if the rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

30579

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

The rope will go off tangential to the path if we're pulling along the rope. Once the rope is off, there is no force pulling on the rope towards gravity, and so it will move in a straight line in the direction it was moving when it was released, until it hits the ground.

30580

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

30582

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

I was thinking that the rope would be going in the same direction if we were going at the point, but not if the rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

30583

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

Once the rope is pulled out, the only thing keeping the rope from moving is the force of the rope. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge. The rope will continue in a straight line in the direction it was moving when it was released, until it hits the ground.

30586

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

I visualized the problem in my head. I was thinking that the rope would be going in the same direction if we were going at the point, but not if the rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

30587

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

The rope will continue to spin in the same direction it was spinning before, keeping the rope spinning in the same direction.

30588

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

Gravity.

30589

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

Once gravity is taken into account, the rope will continue in a straight line in the direction it was moving when it was released, until it hits the ground.

30593

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

I just thought about the rope being pulled in a direction that is perpendicular to the line connecting the center to the edge. The rope will continue in a straight line in the direction it was moving when it was released, until it hits the ground.

30594

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

I was thinking that the rope would be going in the same direction if we were going at the point, but not if the rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

30595

The diagram shows a rope attached to a person (at the center) who is standing in a circular field. The rope is being pulled by a person (at the edge) who is standing in a circular field. The rope is being pulled in a direction that is perpendicular to the line connecting the center to the edge.

What label did you use in your answer?

I was thinking of gravity and how it might have a switch for the rope to hit the ground, but it wouldn't be long for gravity to have an effect on the rope and have the rope hit the ground in the same direction. The rope would continue in a straight line in the direction it was moving when it was released, until it hits the ground.

30596

comments from NB
chapter 1, part 1 page 13-19
Keegan + Tamar

How is biology different from physics and chemistry?

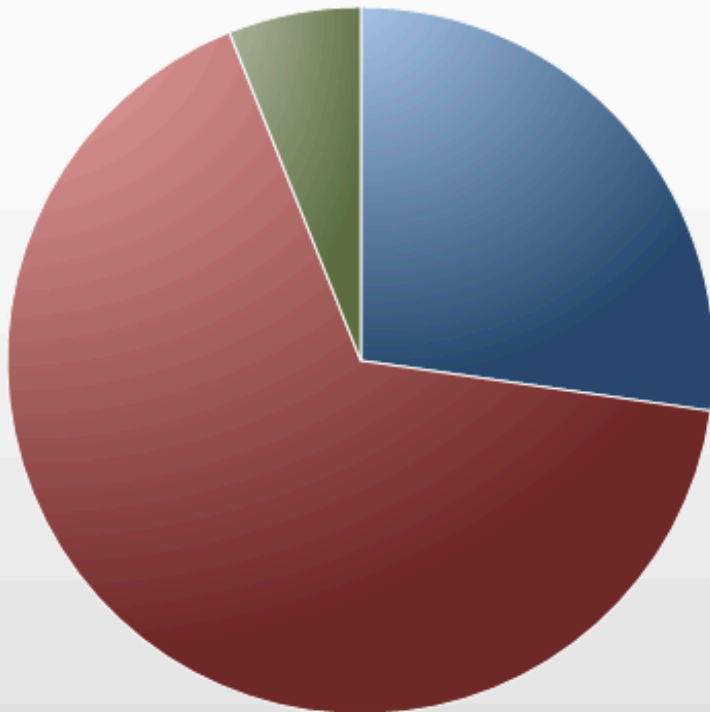
In the text we describe how science can be likened to a cross-word puzzle.

Describe what this means and how does it constrain the types of ideas that can be considered scientific?



explain your thinking

-

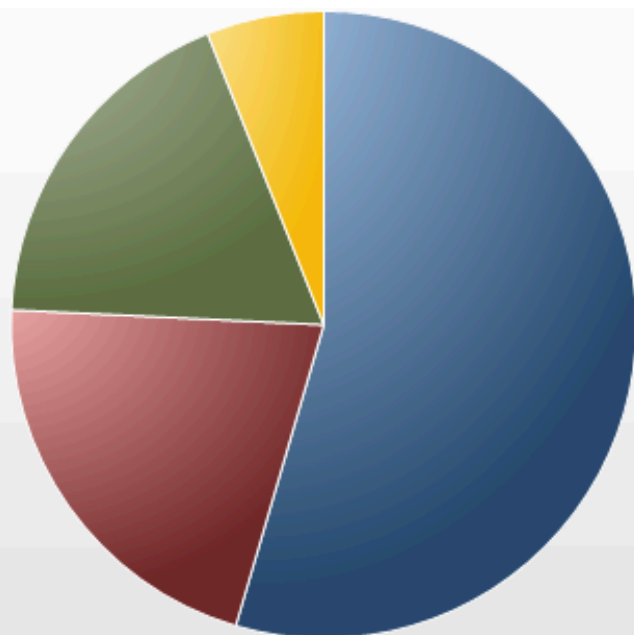


- B: If the mutation inactivated a gene that was harmful.
- C: If the mutation altered the gene product's activity.
- D: If the mutation had no effect on the activity of the gene product.

Once two molecules bind to one another, how could they come back apart again?

- ☐ A: A chemical reaction must change the structure of one of the molecules.
- ☐ B: Collisions with other molecules could knock them apart.
- ☐ C: The complex will need to be degraded.
- ☐ D: They would need to bind to yet another molecule.
- ☐ no idea

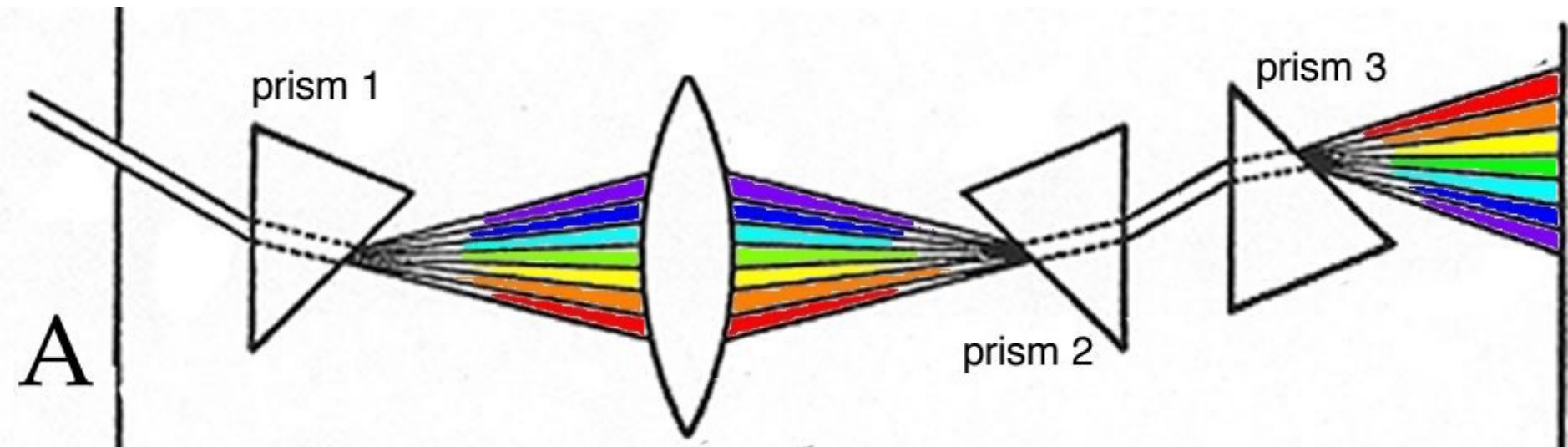
explain your thinking



- A: A chemical reaction must change the structure of one of the molecules.
- B: Collisions with other molecules could knock them apart.
- C: The complex will need to be degraded.
- no idea

Scientific method: Feynman

What was the presumption about light before Newton's prism experiment?



- What kinds of “control” experiments might you add ?
- How could you detect “invisible” forms of light?

chapter 1 p. 19

- How would you use Occam's razor to distinguish between two equally accurate models?
- What does it mean when there are two theoretical explanations for the same phenomena? How might you resolve this situation?
- Outline your approach to deciding whether a particular idea, model, or hypothesis is scientific.

Q: What is the difference between a theory and a law?
(consider gravity or energy)