The Tragedy Of
The Commons

The Tragedy of the Commons is created by an economic situation where individuals share a common resource. If everyone shares correctly and only takes what they need or what was agreed on, then everyone would get their fair share of that resource. However, if certain individuals feel like they can “get away” with taking more than their fair amount, they will deplete the common resource and there will be nothing left for anyone. For example, a mother buys her 4 children a box of cookies. She tells the children they can have one cookie each, once a day. This will ensure that the box of cookies will last the entire week. However, if one of the children decides to “sneak” an extra cookie or two each day, (thinking that no one will notice) they start to throw off the “cookie balance”. As time goes on, let’s imagine that one of the other children decides to do the same thing (take an extra cookie each day), the “cookie balance” will be thrown off even quicker and the box of cookies might only last a couple days. In the end, the two cheating children got to enjoy the extra cookies for a few days, but took away from everyone by acting selfishly.

1) What is the main reason why the Tragedy of the Commons occurs? ____________________________

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2) What could the mother do to make sure each of her kids follows her “cookie rule”? ________________

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Bonus: Think of a second rule the mother can come up with to make sure her kids are not cheating and taking extra cookies each day. ________________________________

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3) Come up with one example in real life of the Tragedy of the Commons. It can be from your life, something that you have witnessed or an example of how people treat the environment.

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The Tragedy Of The Commons

Overgrazing

Picture a rural setting with villages surrounded by grassland open to herdsmen to graze their sheep. This "commons" is available to all shepherds in the community. Imagine that the common pasture is supporting the maximum number of sheep that it can. There is just enough grass to keep all the sheep well fed, but no more. Adding sheep would mean less food for each sheep.

However, for each shepherd it appears they can gain an advantage by increasing the size of their herd. More sheep means more wool and a greater income. However, in doing this there will be slightly less food for each of the sheep and over time the land will become overgrazed (overeaten). Once land becomes overgrazed, grass no longer grows on the pasture, leaving the sheep with nothing to eat and the shepherds to struggle just to keep their flocks alive. However, because each shepherd does not think that adding an extra sheep or two to the flock will make that big of a difference to the land in the short term, they feel that the risk is small and the gain of extra wool is worth it. The tragedy is that when all shepherds act this way, the small losses add up to a disaster for everyone.

1) What is happening in this scenario that shows an example of The Tragedy of The Commons?

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2) Come up with one reason why people acted selfishly in this scenario? _________________

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3) On your own: Provide an incentive or law that will ensure that people no longer try to take advantage of others in this scenario.

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The Tragedy of The Commons

What Can Be Done?

Garrett Hardin coined the term, Tragedy of the Commons in an article he wrote in 1968. He says that problems that fall into this category have no easy solutions. They require changes in human attitudes and behavior.

The problem is that individuals who act with their own selfish interests in mind feel immediate gain from their actions and do not think about the negative things that could occur in the future. Like the shepherd who adds an extra sheep to his flock, the benefit is instant while the negative part is not felt until much later. But when many shepherds act this way they all suffer.

So how do we make people change their attitudes or behavior? One way to do this is to impose heavy fines or taxes that discourage people from acting greedy. For example, having each shepherd to require a special tag for each of their sheep can help track the number of sheep on the pasture. If they are caught without the tag on their sheep, they have to pay a fine after the first offense. After a second offense, maybe they lose the privilege of having their sheep out on the pasture for 3 months. The consequences can get worse as the person continues to disobey the law, until they are no longer allowed to have sheep graze in the community. Another way to get people to comply is to offer positive incentives such as tax breaks, where shepherds get rewarded for doing the right thing. So when they sell their wool, they make more money because they did not deplete the grass on the fields.

1) Why do you think it is so hard to get people to change their behavior? (Hint: What do people often overlook when they are being greedy?)

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2) What are two ways in which we could avoid the Tragedy of The Commons?

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3) In the summer during strong heat waves, people often crank up their air conditioning units, however when too many people do this, electrical blackouts often occur. Come up with one way the power companies could avoid blackouts? What could they offer people to not overuse their AC?

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**Tragedy of Commons**

**Overfishing**

*Overfishing* is another example in which a common resource is being taken at a rate faster than it can be replenished. Unfortunately, this occurs in fisheries around the world. The oceans are not owned by individual fishermen or controlled by countries. They provide a common resource of fish. As the number of fishing boats increases year after year, the total catch increases. However, as the total catch increases, it reduces the fish population's ability to restore itself.

Eventually the total amount of fish being caught drops, putting more financial pressure on fishermen to try to catch even more fish. Catching more fish only breaks down the balance even further and lowers the fish population even more. Currently, 80% of the world's fisheries are either over-exploited, depleted, or in a state of collapse.

When we overfish we run into **two major problems**; the first is we are losing large numbers of species and risk collapsing the ecological balance of our oceans. Secondly, we are at risk of losing a valuable food source that fishermen depend on.

1) Why do you think we as humans have overfished the majority of our oceans?  
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2) What are the two main problems that we have created by overfishing?  
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3) **On your own**: Come up with one way can help protect the world's fisheries from being completely depleted.  
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The Tragedy of Commons

Waste in Our Waterways

In some cases the problem is not one of taking too much from a common resource. Instead the problem is putting too much in. With a small population it is not a problem to dump waste into a river or water source. However, as populations have increased, we have seen an increase in polluted water. Sewage treatment plants often clean and filter out many of the waste products found in water after we use it. In addition, waterways can cleanse themselves of fertilizers or even waste from grazing animals to a certain degree. As long as the load of the waste is not too great, the sewage treatment plant, river or water source can maintain a clean balance. However, if there is too much waste, the river or water source becomes polluted, especially during heavy rainstoms that flood sewage treatment plants (floods do not allow for proper waste removal because treatment plants cannot keep up with all the extra water flowing through). When this happens people can no longer drink the water, cook, or safely swim. Furthermore, many fish and wildlife can be adversely affected. Have you ever tried to go to the beach to find out it’s been closed or the water is not safe to enter? It may be due to heavy waste in the waterway that has created an unhealthy environment.

1) How can you apply the Tragedy of the Commons to this scenario?

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2) TRUE or FALSE: If everyone in a neighborhood applies fertilizer to their lawn, they could fall into The Tragedy of the Commons. (Remember fertilizer pollutes waterways and can harm fish and other wildlife)

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3) List three negative impacts of polluted waterways.

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4) On your own: Come up with one law that could stop illegal dumping in waterways.

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**Tragedy of Commons**

**Greenhouse Gases**

Carbon dioxide (CO₂) is constantly being polluted into the atmosphere and throwing off the carbon cycle. Part of the way the carbon cycle works is that the oceans and forests absorb CO₂. However, when factories, cars, and power plants constantly pump CO₂ into the atmosphere faster than it can be absorbed naturally, the commons are overwhelmed.

Think of the Earth’s atmosphere as a large bathtub. Imagine the concentration of greenhouse gases as the water in the bathtub. Water flows into the tub like CO₂ is emitted into the atmosphere. Like the water running down the drain, CO₂ is removed from the atmosphere. If the rate of flow from the faucet into the tub is equal to what is going down the drain, the water level remains the same. If you turn up the faucet, the level rises and the tub may overflow. Right now our atmospheric bathtub is filling twice as fast as it is draining! As greenhouse gases build up in the atmosphere and contribute to global warming the balance of our planet is being thrown off. As the Earth’s temperatures increase we have seen a greater frequency of extreme weather such as hurricanes, tornados, floods and droughts. This also leads to wildfires, mudslides, loss of crops and the extinction of many species among other things.

**Solutions?** One way the government has tried to limit greenhouse gases is by rewarding factories that use green energy such as solar or wind power. Furthermore, the government restricts how much pollution factories can admit into the air each year. Also, new carbon capture technology is being used to try to recapture carbon dioxide from the air. However, much damage has already been done to our planet and we are now starting to feel the impacts of our selfish choices of the past.

1) **Name three impacts of increased greenhouse gases in the atmosphere?**

   A) ________ B) ________ C) ________

2) **Critical Thinking:** Why it is the responsibility of everyone on our planet to try and keep carbon dioxide emissions down? In your answer, choose two of the following parties and describe what they can do to help lower emissions: **1) Factories or Businesses 2) Government or 3) Citizens**

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Tragedy of Commons: Answer Key

Tragedy of Commons (Cookie Page)

1) The Tragedy of Commons occurs because people act selfishly in thinking they can get away with something in the short term without thinking about the long term consequences.

2) Answers may vary:
   - She could distribute one cookie to each child every day.
   - She could take away the cookie privilege to anyone caught cheating.
   - She could give a positive incentive to not steal extra cookies.

3) Answers may vary: Overfishing, Overgrazing, Deforestation, polluting, etc....

Overgrazing Questions (Shepard Page)

1) The shepherds were acting selfishly in thinking that they could get away with an extra sheep or two on the pasture and did not think about the consequences of their actions. They also assumed that they would be the only one that would cheat and did not think that the other shepherds might do the same thing.

2) Because they wanted the extra short-term economic benefit of more wool.

3) Answers may vary:
   - Impose fines for those shepherds who are taking advantage
   - Come up with a rule in which all shepherds will make the same amount regardless of how much wool they produce. This would ensure more of a community way of thinking rather than a capitalistic way of thinking. (Also, see What Can Be Done? Worksheet)

What Can Be Done?

1) The problem is that individuals acting in their own interests (greedy/selfish) feel immediate gain from their actions and do not think about the negative things that could occur in the future.

2) Impose fines/negative consequences or positive incentives to change the behavior of the shepherds.

3) Answers may vary: Power companies can give customers who use less energy during the summer months discounts (especially during months in which power usage is not as high overall) or power companies can charge more (extra fees) if a certain household goes over a certain threshold of power.
Tragedy of Commons: Answer Key

Overfishing Questions

1) - We have overfished our oceans for the short-term economic benefit of selling more fish.
   - There has also been an increase in fishermen over time.
2) Species have been lost and we are losing a valuable food source.
3) Answers may vary:
   - Impose limits on how many fish can be caught by each fisherman
   - Fine fishermen who try to exploit the system
   - Protect and preserve our ocean ecosystems better
   - Only allow fishing during certain times of the year and only in certain places

Waste In Our Waterways

1) This is an example of the Tragedy of the Commons because it is everyone’s responsibility to not over pollute or only pollute a certain amount, once people pollute too much the common resource (water) becomes polluted.
2) True
3) - Humans can no longer drink, cook or swim in the water.
   - Fish and wildlife are also impacted.
4) - People can be fined or imprisoned.
   - Whoever is responsible for the pollution should be responsible for the cleanup.

Greenhouse Gases

1) Choose any two: As the Earth's temperatures increase we have seen more extreme weather such as hurricanes, tornadoes, floods and droughts. This also leads to wildfires, mudslides, loss of crops and the extinction of many species among other things.
2) It is everyone’s responsibility to lower greenhouse gases because we all live on Earth together and it is our responsibility to preserve our planet for future generations.

Part 2: Answers May Vary

- **Factories**: Can use alternative forms of energy and cut emissions for tax breaks.

- **Government**: The government has tried to limit greenhouse gases by rewarding factories that use green energy such as solar or wind power. Furthermore, the government restricts how much pollution factories can admit into the air each year. Also, new carbon capture technology is being used to try to recapture carbon dioxide from the air. The government has also offered tax breaks to citizens with fuel-efficient vehicles.

- **Citizens**: Can purchase more fuel-efficient vehicles, take public transportation or car pool to limit greenhouse gases. Purchase wind or solar power.