SESSION 1:
SCARCITY & DECISION MAKING

Session Description

Scarcity of resources requires individuals, organizations, and governments to make decisions. Students will explore limited resources, opportunity cost, trade-offs, and the production possibilities curve. In addition, they will experience decision making in several ways by planning a dance, choosing a college, and buying a computer.

Talking Points

1. Scarcity necessitates that a decision be made.

2. Productive resources are scarce because there are not enough of them to produce the unlimited amounts of goods and services that society wants. This is the fundamental economic problem (Step 1 of the PACED model) faced by society.

3. The PACED model provides a five-step process for making decisions:

    P: Identify the **problem**. Usually, the problem is related to scarcity.

    A: List **alternatives**—the options you will choose from.

    C: Select **criteria**—the things that are important to you in making the decision.

    E: **Evaluate** alternatives based on the criteria.

    D: Make a **decision**.

4. Even though people may face the same problem and alternatives, they may have different criteria and evaluate the alternatives differently based on those criteria. So, faced with the same problem, people do not necessarily make the same decision.

5. The PACED model is not about finding the "correct" choice for everybody; it is about making a careful, well-informed decision for yourself.

6. Although societies want a large variety of goods, for simplicity's sake, let's assume that we have a society that wants only two goods. A production possibilities curve (PPC) shows the various combinations of these two goods a society can produce given its available productive resources and current technology (methods of converting resources into goods and services); that is, it shows the alternative mixes of goods that are possible to produce at this time.

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7. To construct a PPC, first find the "all-or-nothing" extremes and then ask what is the maximum amount of one good that could be produced given a certain amount of the other good to find the remaining combinations.

8. Combinations outside the PPC are not possible to produce at this time, while those inside the PPC are possible but do not require the use of all of society's resources.

9. The opportunity cost of a choice is the most-valued alternative that must be given up (it is real goods and services and/or real activities, not simply money or time) when a decision is made.

10. The opportunity cost along a PPC is the amount of one good that must be given up to get more of the other.

11. If all units of a resource are homogeneous (equally productive), the opportunity cost is the same for all units of a good (resulting in a straight-line PPC).

12. If units of a resource are heterogeneous (not equally productive), the opportunity cost rises as more of a good is produced (resulting in a bow-shaped PPC).

13. The simple message of the PPC is that there is a trade-off: Getting more of one thing (one good) means getting less of something else (another good).

Session 1: Standards and Benchmarks

Arkansas Economic Standards

Strand: Economic Decision Making

Content Standard 1: Students will make decisions after considering the marginal costs and marginal benefits of alternatives.

- EDM.1.E.1 Evaluate the roles of scarcity, incentives, trade-offs, and opportunity costs in decision making (e.g., PACED decision making model, cost/benefit analysis)

Common Core State Standards

- CCSS.ELA-Literacy.RH.9-10.1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

- CCSS.ELA-Literacy.RH.9-10.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

- CCSS.ELA-Literacy.RH.9-10.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

- CCSS.ELA-Literacy.SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

- CCSS.ELA-Literacy.SL.9-10.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

- CCSS.ELA-Literacy.RH.9-10.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

- CCSS.ELA-Literacy.RH.11-12.1 Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

- CCSS.ELA-Literacy.SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

- CCSS.ELA-Literacy.SL.11-12.1b Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed.

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- • CCSS.ELA-Literacy.SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

Session 1: Resources

1. Video: Scarcity (*Virtual Economics® 4.5*)

    a. Choose "Browse Economic Concepts."

    b. Choose "Fundamental Economics."

    c. Choose "Scarcity."

    d. Choose the picture on the right.

2. Podcast: Economic Lowdown Series (Federal Reserve Bank of St. Louis)

    a. Episode 1: Opportunity Cost;
        https://www.stlouisfed.org/education/economic-lowdown-podcast-series

3. Video: Decision Making/Cost Benefit Analysis (*Virtual Economics® 4.5*)

    a. Choose "Browse Economic Concepts."

    b. Choose "Fundamental Economics."

    c. Choose "Decision Making/Cost Benefit Analysis."

    d. Choose the picture on the right.

4. ☑ Lesson 1.1: Sam's Sandwiches

5. Focus: High School Economics (Council for Economic Education)

    a. "Planning a Dance" in Lesson 1: Choice, Opportunity Costs, and Decisions

        i. Go to http://www.economicsarkansas.org/.

        ii. Register or sign in.

        iii. Under the "Portal" menu in the green box on the right, choose "high school economics course resources."

        iv. Under the (new) "Portal" menu, choose "Session 1."

        v. Choose "Lesson 1: Choice, Opportunity Costs, and Decisions."

            (1) Use the "Planning a Dance" section only.

6. Economics in Action: 14 Greatest Hits for Teaching High School Economics (*Virtual Economics® 4.5*)

    a. Lesson 2: Economic Decision Making

7. Financial Fitness for Life (*Virtual Economics® 4.5*)

    a. Lesson 3: Decision Making

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8.   Any table from *Consumer Reports*

    a.   Share as a real-world example of the PACED model in action.

9.   Old MacDonald to Uncle Sam (*Virtual Economics® 4.5*)

    a.   Lesson 5: Scarcity and Choice

10.   High School Economics (*Virtual Economics® 4.5*)

    a.   Lesson 1: Production Possibilities and Opportunity Costs

11.   ☑ Lesson 1.2: Constructing Production Possibilities Curves

12.   Lesson: Production Possibilities Frontier (Federal Reserve Bank of St. Louis); https://www.stlouisfed.org/education/production-possibilities

    a.   Choose the PDF and accompanying slides of your choice:

        i.   SMART Notebook

        ii.   PowerPoint

Lesson 1.1: Sam's Sandwiches

Objective

Students will learn the role opportunity cost plays in economic profit.

Time Required

30 Minutes

Materials

- Visual 1

Procedure

1. Relate the following story: Samantha (Sam) is a college student with three months off this summer and wants to earn money during that time. Sam's friend offered her a job working in the make-up department of a large retail store. He told Sam she would likely earn $1,000 per month, or $3,000 for the entire summer. While this sounded good, Sam thought she might be able to earn more by opening a small business: selling sandwiches along a path beside a lake that is very popular with tourists. So, Sam got the necessary permits from the local government to use the space along the path and rented some equipment from Bob's Rent-All. Some of the rental items included a meat warmer, refrigerator for cheese and vegetables, tables, and a cash register. Plus, she purchased meat, cheese, breads, lettuce, tomatoes, and condiments from Superior Foods (a wholesale food supplier). Sam hired high school students to help her, and her business was up and running. Over the summer, she sold 10,000 sandwiches at a dollar each. She created a financial report at the end of the summer to see how well her business performed.

2. Display *Visual 1: Sam's Statement of Revenue and Costs* and describe each item as necessary. Tell the class that Sam's total profit was $2,000! Ask the following:

    - How do you think Sam feels about her profit? (*Probably not so good. Students will likely recognize that Sam could have made more at the retail store.*)

3. Define economic profit as total revenues (price times quantity sold) minus total costs, where total costs are the opportunity costs of *all* resources (inputs) used. For example, if the high school students could earn $8 per hour working at any fast food restaurant in town, Sam must pay at least $8 per hour to get them to work for her. Explain that $8 per hour is the opportunity cost of the labor resource. If Bob were to give Sam all

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the equipment for free, he would lose the opportunity to rent it to someone else for perhaps $2,000. Thus, $2,000 is the opportunity cost of the capital resources. The other two costs listed similarly represent the opportunity cost of using them. Ask the following:

- Were any other resources used that are not accounted for on the report? (*Yes, Sam!*)

4. Explain that by deciding to operate her own business, Sam gave up the opportunity to earn $3,000 at the retail store. Thus, the opportunity cost of Sam's entrepreneurial resources is $3,000. Although there is no explicit payment made for using this resource, it still must be accounted for in determining the economic profit of this business. When this $3,000 cost is added to the others, total costs are $11,000, meaning that Sam's business suffered an economic loss of $1,000 ($10,000 – $11, 000). Sam is not happy with her choice. It cost her $1,000 to run the sandwich shop because she only earned $2,000 when she could have earned $3,000 at the retail store.

5. Define "normal profit" as the minimum amount necessary to keep the entrepreneurial resource—the person running the business—in the business. The normal profit is just the opportunity cost of the entrepreneurial resource. Sam's normal profit was $3,000. So, normal profit is one of the costs that must be included in determining economic profit.

6. Note that if Sam (or any entrepreneur) is not able to make enough to cover all of her explicit costs plus her normal profit, she will likely close her business and move to her next-best opportunity. On the other hand, if she is able to earn an economic profit, then she is very happy to stay in business because she would earn not only her normal profit, but extra profit beyond that—economic profit.

Lesson 1.1, Visual 1: Sam's Statement of Revenue and Costs

Total Revenue

10,000 sandwiches at $1 each	**$10,000**
(Price × Quantity = $1 × 10,000)	

Total Costs

Permits (land/space resources)	**$2,000**
Payment to high school workers (human/labor resources)	**$3,000**
Payment to Bob's Rent-All (capital resources, i.e., equipment)	**$2,000**
Payment to Superior Foods (natural/intermediate resources)	**$1,000**
Total costs	**$8,000**

Lesson 1.2: Constructing Production Possibilities Curves

Objective

Students will

- identify the opportunity cost of producing one good in terms of giving up another good and
- construct a production possibilities graph.

Time Required

One class period

Materials

- Handout 1, one copy, with the 4 individual apples/carrots cards cut out and folded along the center lines
- Handout 2, one copy for each student

Procedure

NOTE: Prior to this lesson, complete "Lesson 5: Scarcity and Choice" in *Virtual Economics® 4.5*: Old MacDonald to Uncle Sam.

1. Select three students of varying height to come to the front of the room. Line them up from shortest to tallest. Explain to the class that these are three resources (human resources) that are going to be used to harvest carrots and apples. Harvesting carrots requires simply bending down and pulling up the carrots. Have each student simulate this and note that they each can do it equally well. Harvesting apples requires picking them off a tree. Since they have no additional resources (such as a ladder), this requires them to reach up and/or jump up to pick the apples. Ask the following:

   - How does the ability of these students to pick apples differ? (*The tallest student can reach apples more easily and can jump higher to reach apples. The shorter students would likely not be able to reach as many apples and be less successful.*)

2. Give the students one of the production cards from *Handout 1: Production Possibilities Cards* as follows:

   - Give the shortest student the "First Worker" card, which has 1 apple and 1 carrot.

- Give the middle-height student the "Second Worker" card, which has 3 apples and 1 carrot.

- Give the tallest student the "Third Worker" card, which has 5 apples and 1 carrot.

3. Have all students turn their cards to the carrot side. Explain that in one day each student can harvest one carrot (i.e., they are equally productive in pulling carrots). Have the students turn their cards over and note that the number of apples they could pick in one day is different (i.e., they are not equally productive in picking apples, so the production trade-offs are not the same). Given this information, ask the students the following question:

- What is the maximum number of carrots that these three people could pull in a day, and what is the maximum number of apples they could pull in a day? (*Carrots: 1 + 1 + 1 = 3. Apples: 1 + 3 + 5 = 9.*)

4. Have the students return to their seats.

5. Distribute *Handout 2: Production Possibilities Graph* and have all students plot these two points. (*Handout 2: Production Possibilities Graph—Answer Key* is provided for teacher reference.) Ask the following:

- What is the maximum number of apples the three students could pick if they also pulled 1 carrot? (*8; To maximize the number of apples, the first worker should pull one carrot because the cost, or lost production of apples, would only be 1 apple. If one of the other workers pulled the 1 carrot, the cost in terms of apples would be greater. This can be demonstrated by having each student be the only carrot puller and looking at the number of apples that can still be picked.*)

- What is the maximum number of apples this group could pick if they also pulled two carrots? (*5; The first and second workers would have to pull the carrots while the third worker picked the apples.*)

6. Have students plot the last two points (1 carrot / 8 apples and 2 carrots / 5 apples) on their graphs and then connect the points to form the production possibilities curve. Ask the following:

- How does this graph compare with the one constructed for squares and triangles? (*It is not a straight line, but bowed outward from the origin.*) Explain that in this case the opportunity cost of getting more carrots rises (first 1 apple, then 3, and then 5), while previously, the opportunity cost of getting more squares was always the same (2 triangles).

- What caused this difference? (*The resource strips produced equal amounts of squares and triangles. The [human] resources for producing carrots and apples were not equally productive.*)

- Are all people, machines, and lands equally productive in producing real goods and services? (*No, people have different abilities and lands produce some crops*

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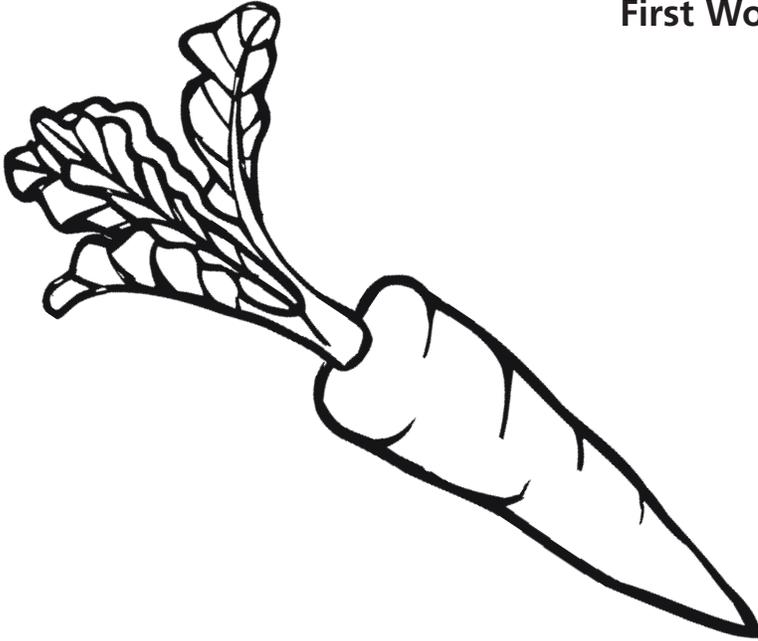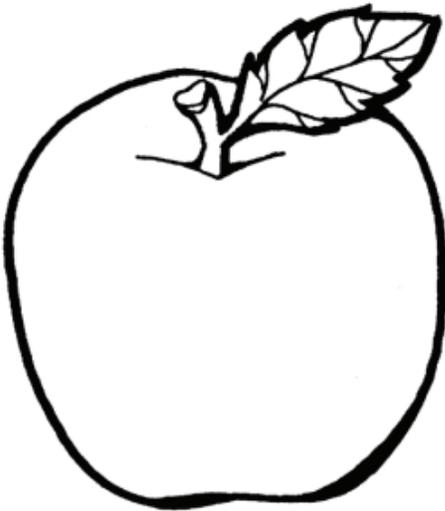
better than others.) Explain that this implies that, in general, producing more of any one good physically requires giving up increasing amounts of other goods. This is referred to as the "law of increasing costs."

7. Ask the following:

    • If each of the three workers harvesting apples and carrots were trained to jump higher so that they each could increase the probability of getting an apple on each jump, how would this likely change the total amount of apples they could pick each day? (*They would each be able to pick more.*)

    • How many apples would each person be able to pick if the training enabled each of them to pick one more apple? (*First worker, 2; second worker, 4; third worker, 6*)

8. Have students plot a new production possibilities curve based on the increased production. (*The maximum number of carrots that can be pulled is still 3; the maximum number of apples would now be 2 + 4 + 6 = 12. The other points would be 1 carrot / 10 apples and 2 carrots / 6 apples.*)

9. Ask the student volunteers to return to the front of the room and retrieve their signs.

10. Going back to the original situation, bring up a fourth student and give him or her the "Fourth Worker" card from Handout 1, which has 1 carrot and 2 apples. Ask the following:

    • What would happen to the production possibilities curve with the addition of this fourth resource? (*The curve would shift out, making more carrots and apples available for each combination.*)

11. Have students construct the new production possibilities curve for this case. (*The maximum number of apples would be 11, while the maximum number of carrots would be 4. The other points would be 1 carrot/10 apples, 1 carrot/8 apples, and 3 carrots/5 apples.*)
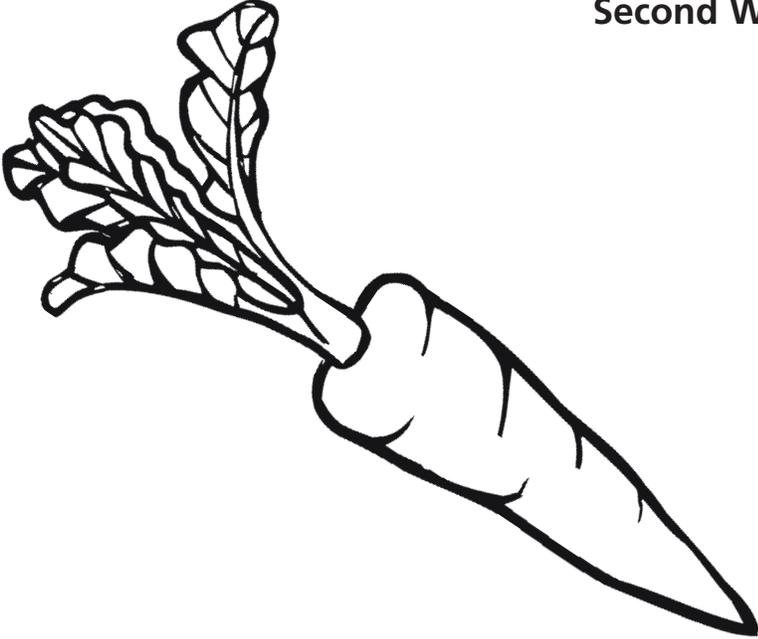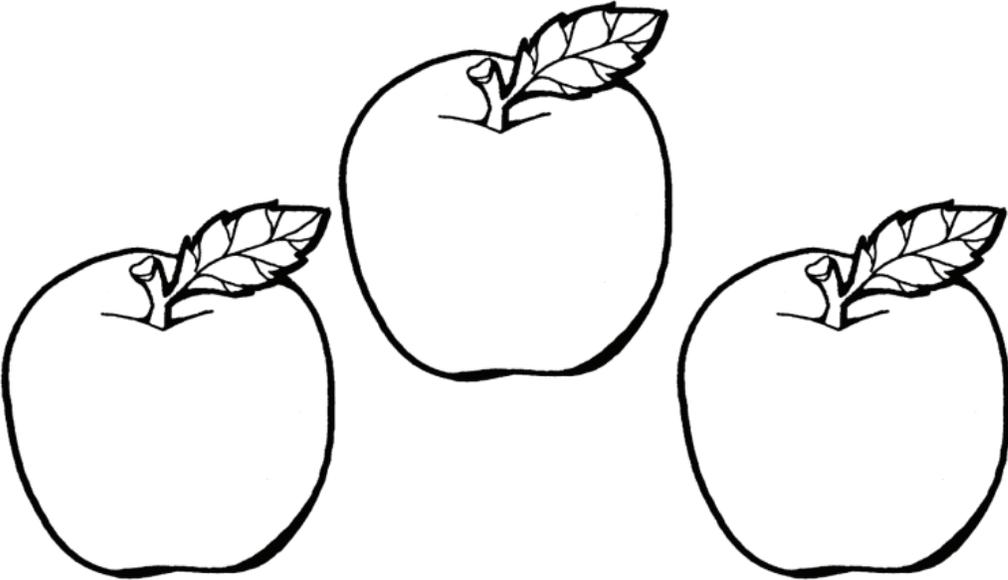
Closure

12. Ask the students to name two ways a society could increase its production possibilities or shift its production possibilities outward? (*Increase the productivity of its resources [possibly through training or advances in technology] and increase the amount of its resources.*)

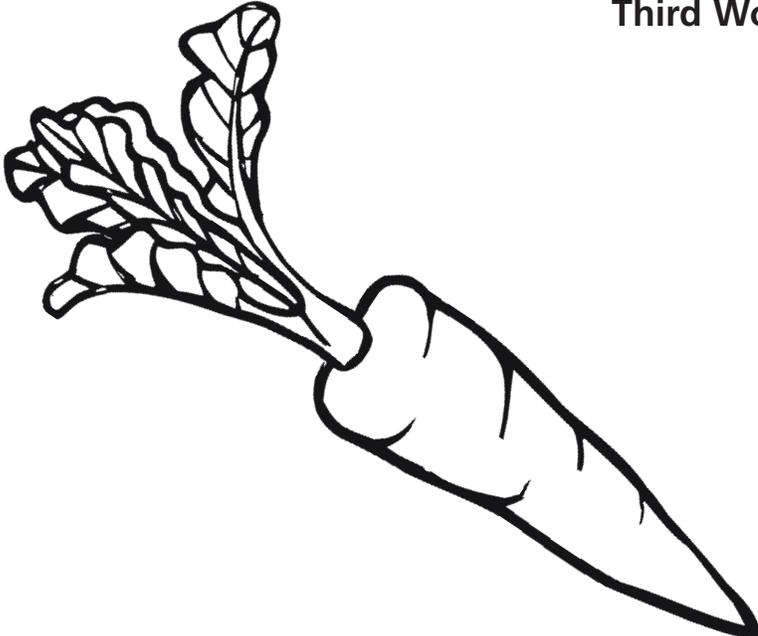## Lesson 1.2, Handout 1: Production Possibilities Cards (page 1 of 4)

First Worker

First Worker

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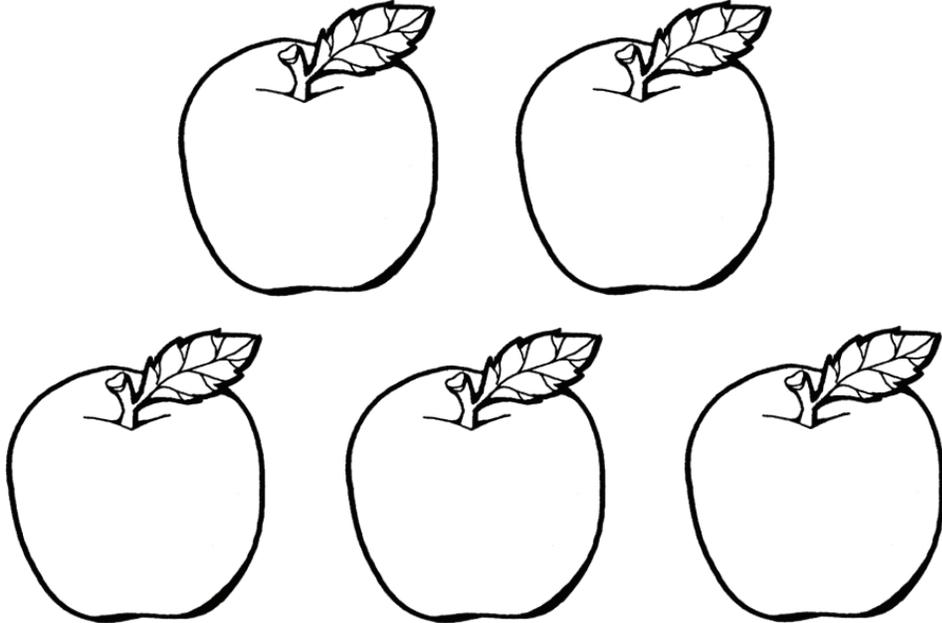**Lesson 1.2, Handout 1: Production Possibilities Cards (page 2 of 4)**

Second Worker

Second Worker

Lesson 1.2, Handout 1: Production Possibilities Cards (page 3 of 4)
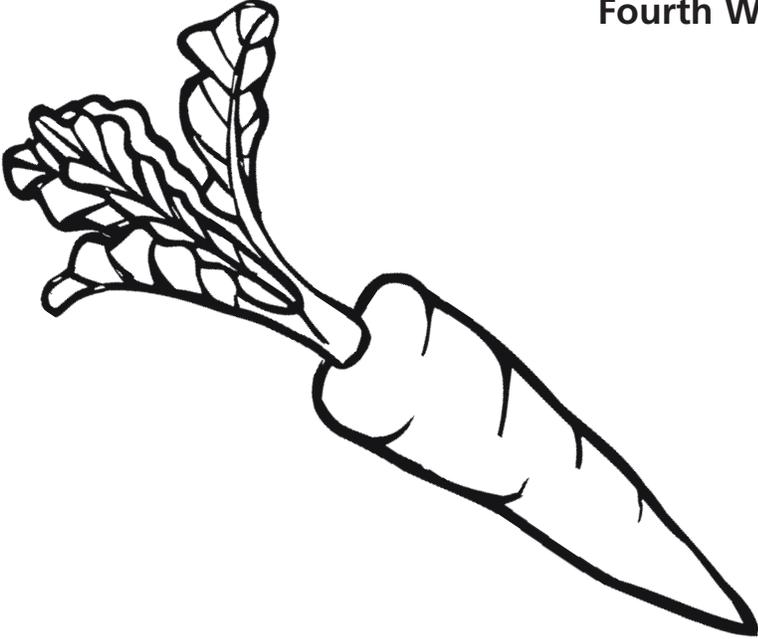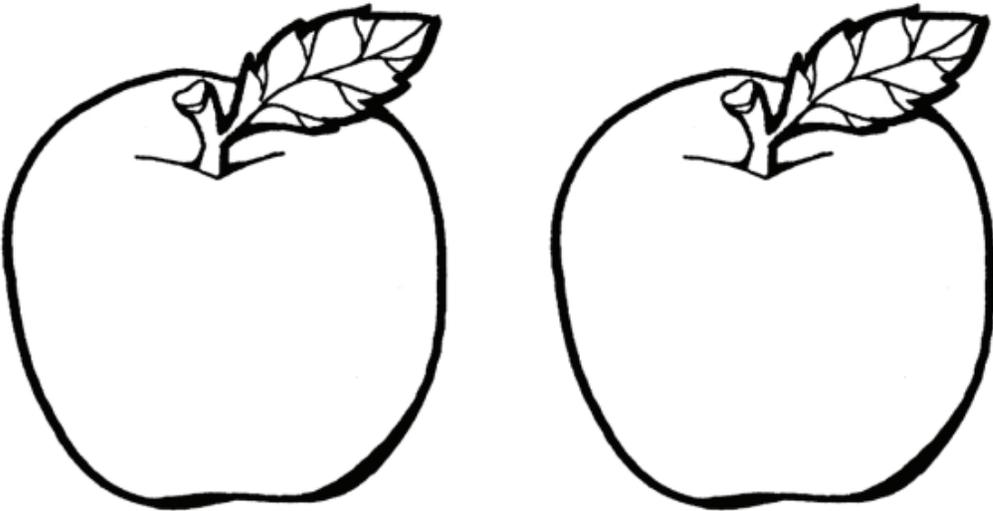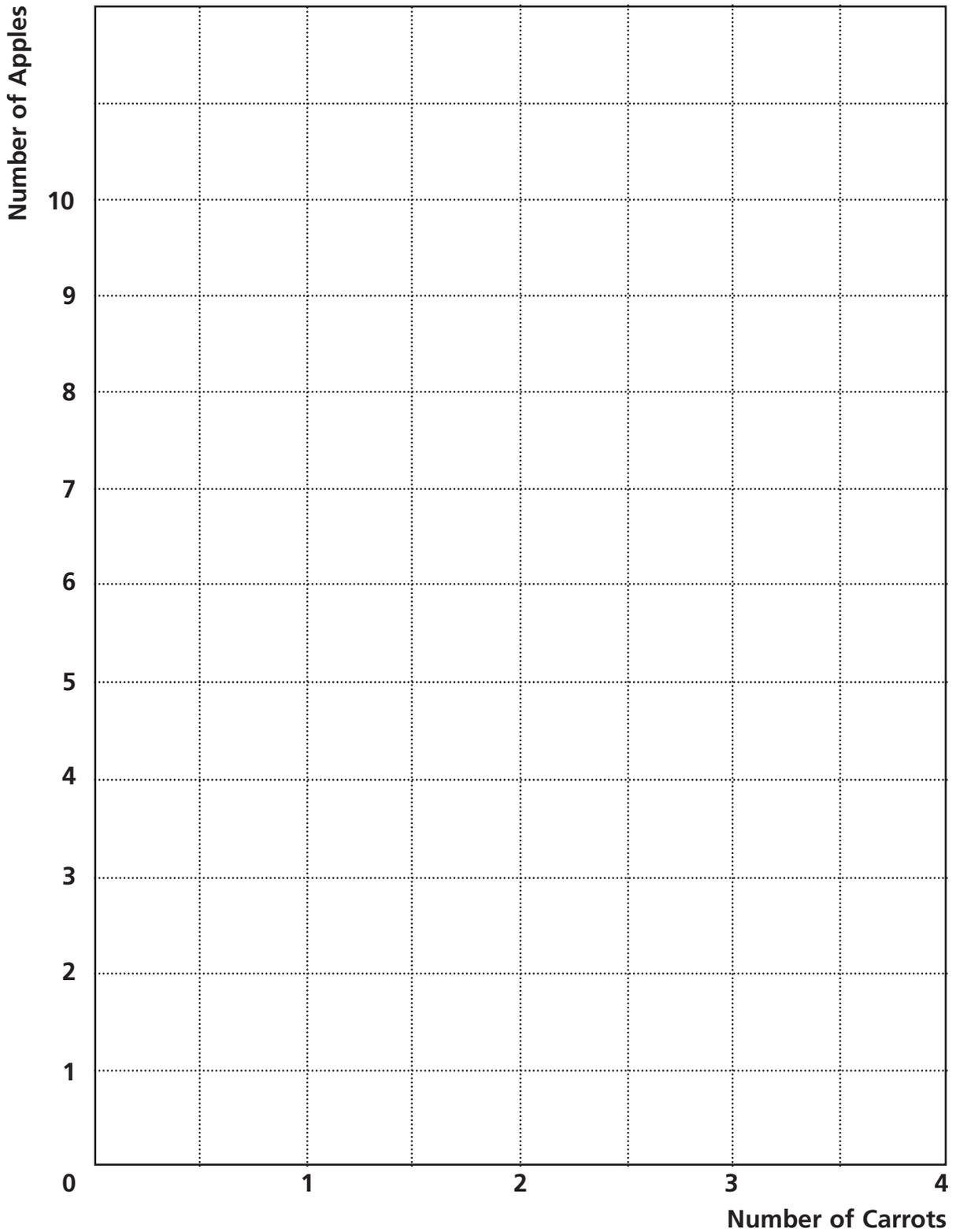
Third Worker

Third Worker

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Lesson 1.2, Handout 1: Production Possibilities Cards (page 4 of 4)

Fourth Worker

Fourth Worker

Lesson 1.2, Handout 2: Production Possibilities Graph

Number of Apples (y-axis, labeled 1–10)

Number of Carrots (x-axis, labeled 0–4)

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Lesson 1.2, Handout 2: Production Possibilities Graph—Answer Key