

- I. Title: Comparative Advantage and Cookie Trade
- II. Enduring Understanding:
 - a. Trade can improve the wellbeing of all nations.
 - b. Comparative advantage allows trading partners to get the most out of their resources and abilities.
- III. Lesson Essential Question: How can trade allow economies to have things that they could not produce on their own?
- IV. Introduction – Trade can allow economies to expand the goods and services available to their people. In this lesson students demonstrate the advantages of trade by acquiring the ingredients for chocolate chip cookies. They will decide what their economy is best suited to produce and use their products to exchange with other economies.
- V. National Voluntary Content Standards
 - a. Standard 5: Trade
 - i. Students will understand that: Voluntary exchange only occurs when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.
 - ii. Students will be able to use this knowledge to: Negotiate exchanges and identify the gains to themselves and others. Compare the benefits and costs of policies that alter trade barriers between nations, such as tariffs and quotas.
 - iii. Benchmark Knowledge:
 1. 12th Grade
 - a. # 1. Imports are paid for by exports, savings or borrowing. -- Participate in a trading simulation where students represent people or organizations in different countries with specific goods to sell and specific goods they want to buy; explain how each nation pays for its imports with its exports. After concluding the simulation, ask students how they might acquire additional imports after they had exhausted their export revenues.
 - b. # 2. When imports are restricted by public policies, consumers pay higher prices and job opportunities -- Analyze the political and economic implications of a proposed ban on imported products.
 - b. Standard 6: Specialization
 - i. **Students will understand that:** When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.
 - ii. **Students will be able to use this knowledge to:** Explain how they can benefit themselves and others by developing special skills and strengths.

1. 12th grade
 - a. # 1. Individuals and nations have a comparative advantage in the production of goods or services if they can produce a product at a lower opportunity cost than other individuals or nations.

VI. Georgia Performance Standards

a. High School

- i. Fundamental Economic Concepts SSEF3 – **The student will explain how specialization and voluntary exchange between buyers and sellers increase the satisfaction of both parties.**
 1. Give examples of how individuals and businesses specialize.
 2. Explain that both parties gain as a result of voluntary, non-fraudulent exchange.
- ii. International Economic Concepts SSEIN1 – **The student will explain why individuals, businesses, and governments trade goods and services.**
 1. Define and distinguish between absolute advantage and comparative advantage.
 2. Explain that most trade takes place because of comparative advantage in the production of a good or service.
 3. Explain the difference between balance of trade and balance of payments.

VII. Economic Concepts:

- a. Comparative advantage
- b. Absolute advantage
- c. Opportunity cost
- d. Trade
- e. Gains from trade

VIII. Knowledge

- a. The student will know that:
 - i. People trade to improve their own wellbeing.
 - ii. Both parties can benefit from trade.
 - iii. The opportunity to trade encourages specialization.
 - iv. Specialization can increase the gains to be had from trading.
- b. The student will be able to:
 - i. Demonstrate the trade-offs a producer or country faces by being able to draw a production possibilities frontier when given a production possibilities schedule.
 - ii. Compare opportunity costs different producers or countries face by comparing the slopes of their production possibilities frontiers.

- iii. Identify producers or countries that have a comparative advantage relative to another producer or country by comparing the slopes of their production possibilities frontiers.

IX. Materials needed

- a. PPS (Production Possibilities Schedule) Trade cards
 - i. 1 set of 6 (one card for each team)
 - ii. 1 set of 3 (one card for 3 pairs of teams)
- b. 30 Butter cards
- c. 30 Flour cards
- d. 30 Sugar cards
- e. 20 Chocolate chip cards
- f. 30 Egg cards
- g. 18 Vanilla cards with one cut in half
- h. 18 Trade Summary Sheets – one for each team for each round of trading

X. Time required – two 55-minute class periods

XI. Procedure – Trading Round 1

- a. Begin the class by dividing the class into 6 teams. Inform the class that each team will be a country (I allow each team to name their country). Inform the class that the job of the rulers of each country is to feed its people. The only thing that people eat is Chocolate Chip Cookies.
- b. Write on the board the following “Recipe” for Chocolate Chip Cookies:

Chocolate Chip Cookie Recipe	
Item	Amount
Butter	2
Flour	2
Sugar	2
Chocolate Chips	1
Eggs	2
Vanilla	1

- c. Have ready to distribute the following ingredient cards:

Round 1 Distribution	
Item	Amount
Butter	12
Flour	12
Sugar	12
Chocolate Chips	6
Eggs	12
Vanilla	6

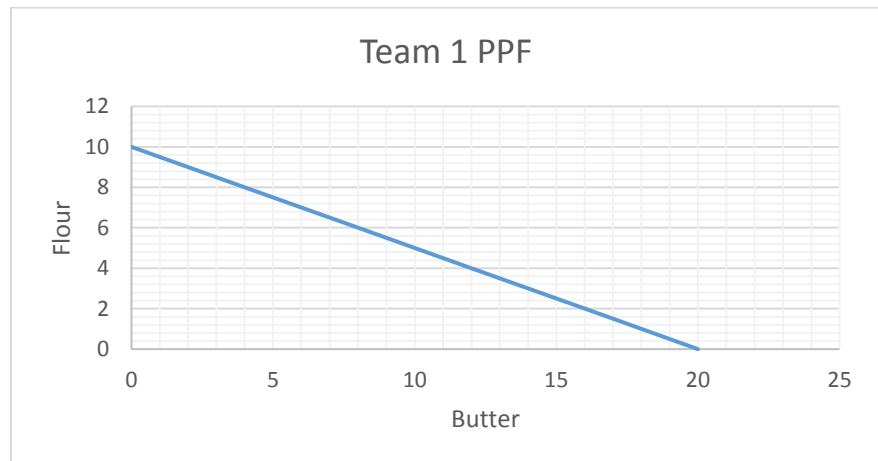
The distribution of ingredients to each team should be mixed and randomly distributed. Do not make any attempt to be fair or distribute equal amounts of ingredients to all teams. Try to make sure that no team has all of the ingredients it will need to complete a batch of chocolate chip cookies.

- d. Distribute one Trade Summary Sheet to each team. Explain to the class that they will be given 3 minutes to move around the classroom and try to trade the ingredients that they have for the ingredients they need to complete a batch of cookies. If they succeed, the people of their country will be happy and erect statues in their honor. If they fail, the people of their country will be miserable and try to overthrow their leaders. Note that there should be exactly enough ingredients in circulation to complete 6 batches of cookies. But, it is unlikely that all of the batches of cookies will get made. (NOTE: I allow my classes to make arrangements to “split” a batch of cookies if they have all the ingredients between them. Each team gets credit for half of a batch of cookies. Their people are not as happy as they would be with a full batch of cookies but not as mad as they would be with no cookies.)
- e. Once the trading time is complete have each team return to its location. Then, one by one, have each team report (I write the results on the board):
- i. Did it manage to feed its people (complete a batch of Chocolate Chip Cookies)?
 - ii. With whom did they trade?
 - iii. What did they get?
 - iv. What did it cost them?
- f. Congratulate the teams that fed their people. Collect all the ingredients.
- g. At this point I present the *David Ricardo Trade Lecture* material up to (and including) the point of showing the potential gains to trade. (See Ricardo Lecture)

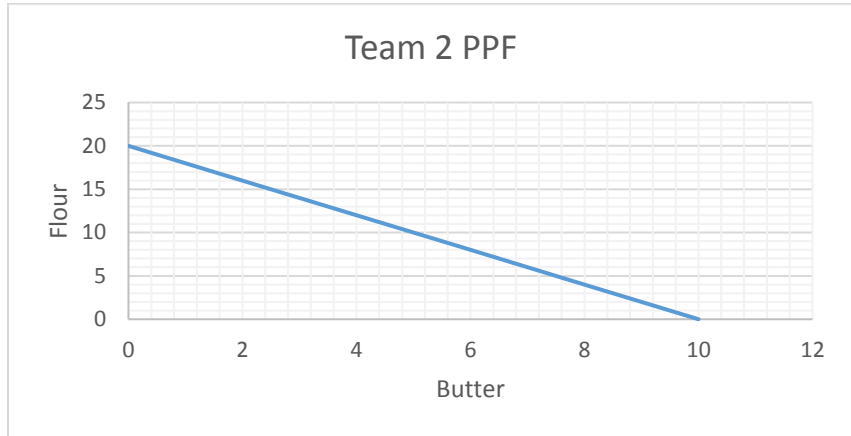
XII. Procedure – Trading Round 2

- a. Distribute to each team the PPS Trade Card that corresponds to that team and a Trade Summary Sheet. Have all the students write down the information from the card on a sheet of paper. Have all the students graph the Production Possibilities Frontier that corresponds to the information on their card. Explain to the class that each team can choose a point on its PPF (which corresponds to one row on its PPS Trade Card) which will represent the combination of goods it will produce and then use to trade. Give the teams a few minutes to discuss amongst themselves what combination will be best for them. Do not let them see the cards from other teams.
- b. Once all of the teams are ready, collect the PPS Trade Cards and provide each team with the ingredients that correspond with the choice that they made. You will need to have available all of the ingredient cards at this point (even though it is unlikely that all will get used).
- c. Once the teams all have their ingredients allow them to trade once again. Limit their time to the same amount as before (or, if they have the hang of trading you can reduce the time a little). Again, have them keep track of the trades they make on the Trade Summary Sheet.
- d. Once the trading time is complete have each team return to its location. Then, one by one have each team report (I write the results on the board):
 - i. Did they manage to feed their people (complete a batch of Chocolate Chip Cookies)?
 - ii. With whom did they trade?
 - iii. What did they get?
 - iv. What did it cost them?
 - v. Have each team show their PPF graphs. They should look something like this (it does not matter which good they put on which axis):

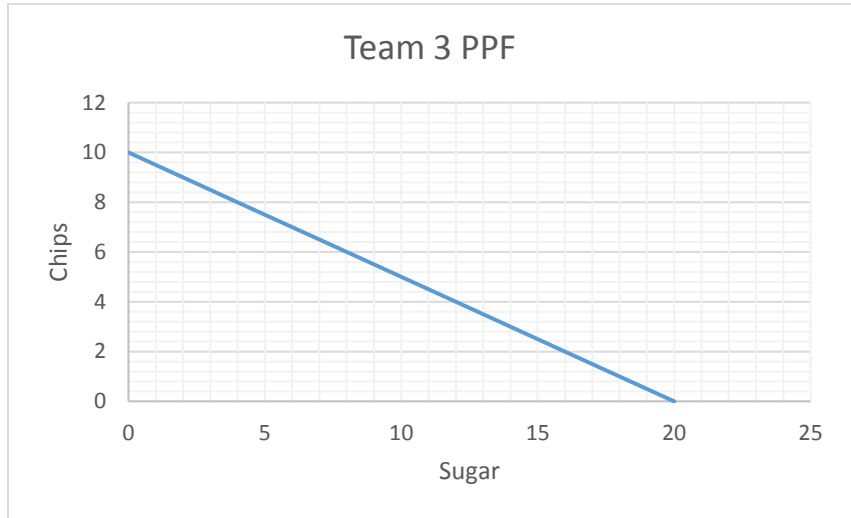
1. Team 1:



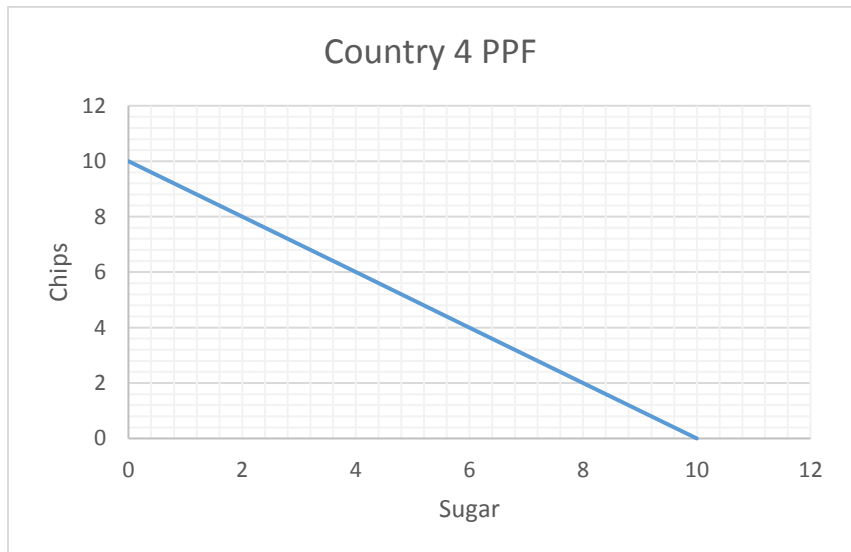
2. Team 2:



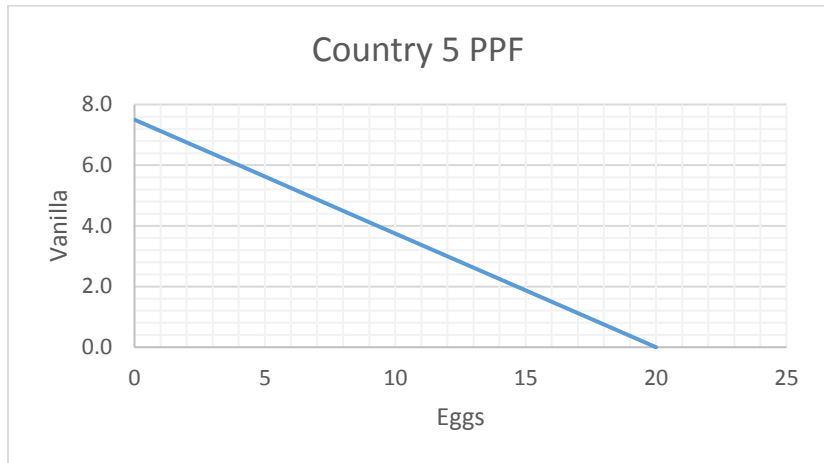
3. Team 3:



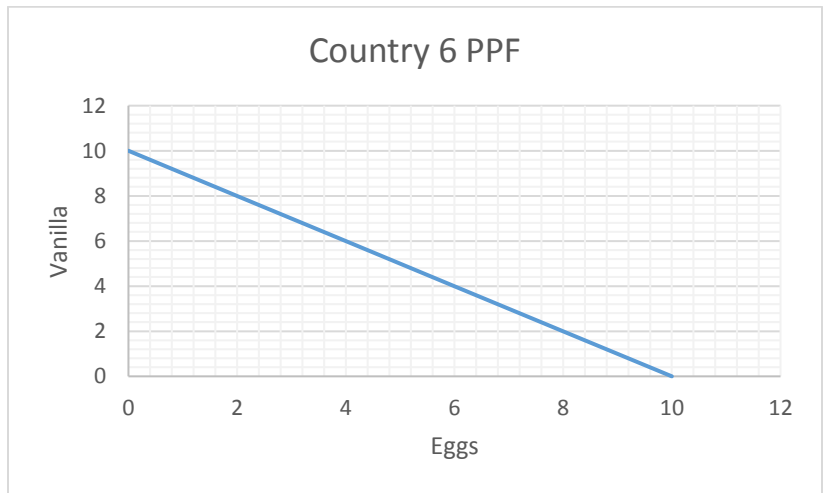
4. Team 4:



5. Team 5:



6. Team 6:



e. Congratulate the teams that fed their people. Collect all the ingredients.

XIII. Procedure – Trading Round 3

- a. Some of your students may note that they could not take advantage of the *Comparative Advantage* lesson that you just taught them because they did not know what the *opportunity costs* of other teams were. In this, the final round they will have this information. First, give each team a Trade Summary Sheet. Give to team 1 the combined PPS Trade card that has the PPC information for Team 1 and Team 2. Give to team 3 the combined PPS Trade card that has the PPC information for Team 3 and Team 4. Give to team 5 the combined PPS Trade card that has the PPC information for Team 5 and Team 6. Allow teams 1 and 2 to get together and look over the combined information for their countries. Do the same for teams 3 and 4 and teams 5 and 6. Encourage the class to write down the information that they now have. Give the teams a few minutes to discuss what production choice is best for them. Remind each team that they must still produce a combination of outputs that is on *their own* PPF (a row of their PPS). Then, once the time is up, collect the cards and have the teams go back to their places.
- b. Once again, go from team to team and provide each team with the ingredients that they choose from their PPS. Note: One might expect every team to *Specialize* by producing the one ingredient that it has a *comparative advantage* in. In my experience, this almost never happens. For reasons that will be discussed below, almost without fail one or more team will choose to produce ingredients that do not take full advantage of their comparative advantage. This is ok.
- c. After all the ingredients are distributed it is time to let the teams trade one last time. They may trade with any group they like. Again, have each team keep track of the trades it makes on their Trade Summary Sheet. (Note: I like to increase the stakes at this point. Because I use small bags of M&Ms to represent the chocolate chips I tell the teams that any team that feeds its people will be allowed to keep their M&Ms at the end of this round. If they manage to produce more than one batch of Chocolate Chip Cookies they may keep the M&Ms of all the batches they produce.)
- d. Once the trading time is complete have each team return to its location. Then, one by one have each team report (I write the results on the board):
 - i. Did they manage to feed their people (complete a batch of Chocolate Chip Cookies)?
 - ii. With whom did they trade?
 - iii. What did they get?
 - iv. What did it cost them?
Added Questions:
 - v. Ask each team what the opportunity cost of each of the two ingredients it could have produced was.

- vi. Compare the production decisions of each of the teams that could have produced the same ingredients (1&2, 3&4, 5&6).
 1. Which team had the comparative advantage in which ingredient?
 - a. Teams 1 and 2:
 - i. Team 1 has the comparative advantage in producing butter (1 butter costs $\frac{1}{2}$ of a flour compared to 1 butter costing 2 flours for Team 2).
 - ii. Team 2 has the comparative advantage at producing flour (1 flour costs $\frac{1}{2}$ of a butter compared to 1 flour costing 2 butters for Team 1).
 - b. Teams 3 and 4:
 - i. Team 3 has the comparative advantage in producing sugar (1 sugar costs $\frac{1}{2}$ of a chip compared to 1 sugar costing 1 chip for Team 4).
 - ii. Team 4 has the comparative advantage in producing chips (1 chip costs 1 sugar compared to 1 chip costing 2 sugars for Team 3).
 - c. Teams 5 and 6:
 - i. Team 5 has the comparative advantage in producing eggs (1 egg costs $\frac{3}{8}$ of a vanilla compared to 1 egg costing 1 vanilla for Team 6).
 - ii. Team 6 has the comparative advantage in producing vanilla (1 vanilla costs 1 egg compared to 1 vanilla costing $\frac{8}{3}$ eggs for Team 5).
 2. Did the teams take full advantage of their comparative advantage (i.e. did each team completely *Specialize*)?
 3. If not, why not? (Some of the answers may be rather interesting such as, they did not trust each other, they wanted to ensure they had at least some of the other ingredient if negotiations broke down. Of course, they might not have gotten the point yet.)
 4. If every team perfectly specialized there are enough ingredients available to make 10 batches of cookies. If 10 batches of cookies were made, Congratulations! That almost never happens. If not, see if the students can figure out which teams held back the rest of the world. If even one team did not perfectly specialize then the Global Production of cookies that is possible will be less than 10 batches of cookies. This is a point that is useful for carrying over to any discussion of tariffs, quotas or other ways countries might impede trade. Note that when trade is impeded in one area it may impact other countries besides those engaged in any trade disputes.
- e. Discussion of Results: Depending on the time that is available the classroom discussion can now head into a number of different directions:

- i. Benefits of Specialization: With specialization it is possible for the *global* economy to produce 10 batches of cookies. Two practical ways to show this are:
 1. Note how many more ingredients can be produced than in the starting round.
 2. Point out that if any country did not specialize they held back *global* production of chocolate chip cookies.

- ii. Do countries in the real world *Perfectly Specialize*? The answer is “No” for a number of reasons. Some of the reasons involve things that arise in the game.
 1. In the real world it is not always possible to know who has a comparative advantage in what. Trade encourages people of different countries to get to know one another. One of the rewards of learning about other countries is that you start to find out who has lower opportunity costs for different products.
 2. In the real world trade agreements can break down. You want to be able to have some products available in case you cannot acquire it from abroad (recent issue with air bag recalls points to the need to have more suppliers of air bags).
 3. In the real world we do not always trust individuals from other countries. Trade with mutual benefits creates a more trusting environment. But, caution can sometimes be prudent.
 4. It is rare that all the producers of a particular good in one country have a comparative over all of the producers of the same good in another country. That means that although one country may buy most of a particular good from another country, it may also produce some of that good itself. For example, while many toys might come from China into the United States, some toy manufacturers in the United States may be more efficient than producers in China at producing particular toys. Therefore, those toys will still be produced in the United States. A more sophisticated model that would show this would be one that has Producing Possibilities Frontiers that are curved out from the origin rather than being linear.

- iii. Why do countries in the real world sometimes restrict trade? Countries sometimes erect trade barriers such as *Tariffs and Quotas*.
 1. As the students to think of the people in their country who produced the two items on their PPS card. If they chose to specialize the people who were making the ingredient that they now bought from another country would be out of work. In the real world, the leaders of a country might want to protect its workers who are at a *comparative disadvantage* to workers in another country. In this lesson students can see that the act of protecting workers in an industry that is less competitive compared to producers in another country imposes a cost

on the economy by making the protected good more expensive (in terms of the amount of the other good they must give up to get more of the protected good).

2. Due to the expansion of *Free Trade Agreements* tariffs and quotas are the exception rather than the norm. But, it is worth showing what would happen if one of the countries was prevented from selling its product in the classroom market (I tend to pick sugar as it is one of the goods that has been impacted by trade restrictions with Cuba). In this simulation if we remove some of the sugar from the total produced we can see that everyone will have a harder time making cookies to feed their people.
- f. Assessment Questions: the following questions can be used to assess your students' understanding of the concepts contained in the lesson.

- XIV. Cards:
a. Round 1 – Individual economies

Country 1	
Butter	Flour
20	0
16	2
12	4
8	6
4	8
0	10

Country 2	
Butter	Flour
10	0
8	4
6	8
4	12
2	16
0	20

Country 3	
Sugar	Chips
20	0
16	2
12	4
8	6
4	8
0	10

Country 4	
Sugar	Chips
10	0
8	2
6	4
4	6
2	8
0	10

Country 5	
Eggs	Vanilla
20	0.0
16	1.5
12	3.0
8	4.5
4	6.0
0	7.5

Country 6	
Eggs	Vanilla
10	0
8	2
6	4
4	6
2	8
0	10

b. Round 2: Trading partner

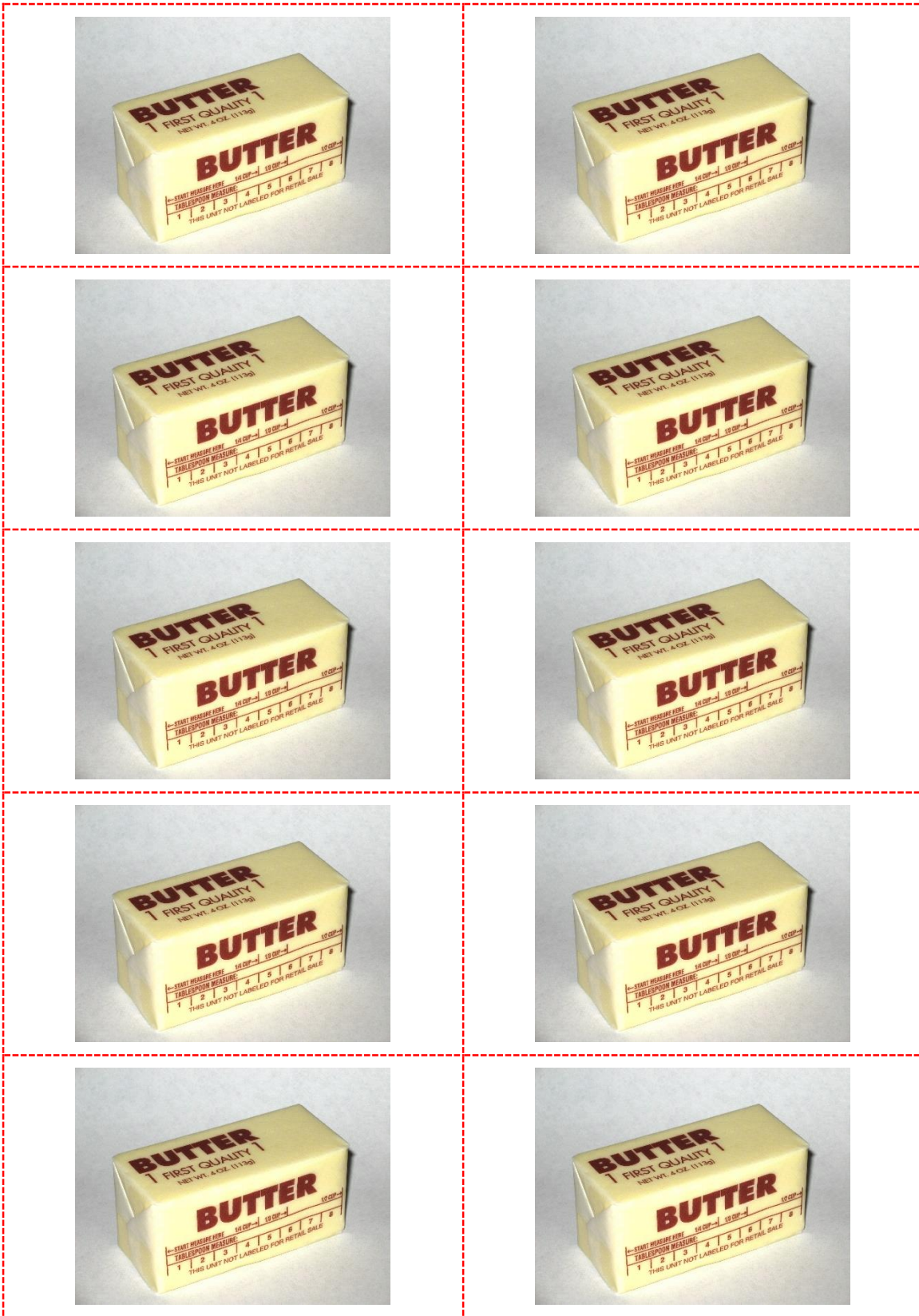
Country 1			Country 2	
Butter	Flour		Butter	Flour
20	0		10	0
16	2		8	4
12	4		6	8
8	6		4	12
4	8		2	16
0	10		0	20

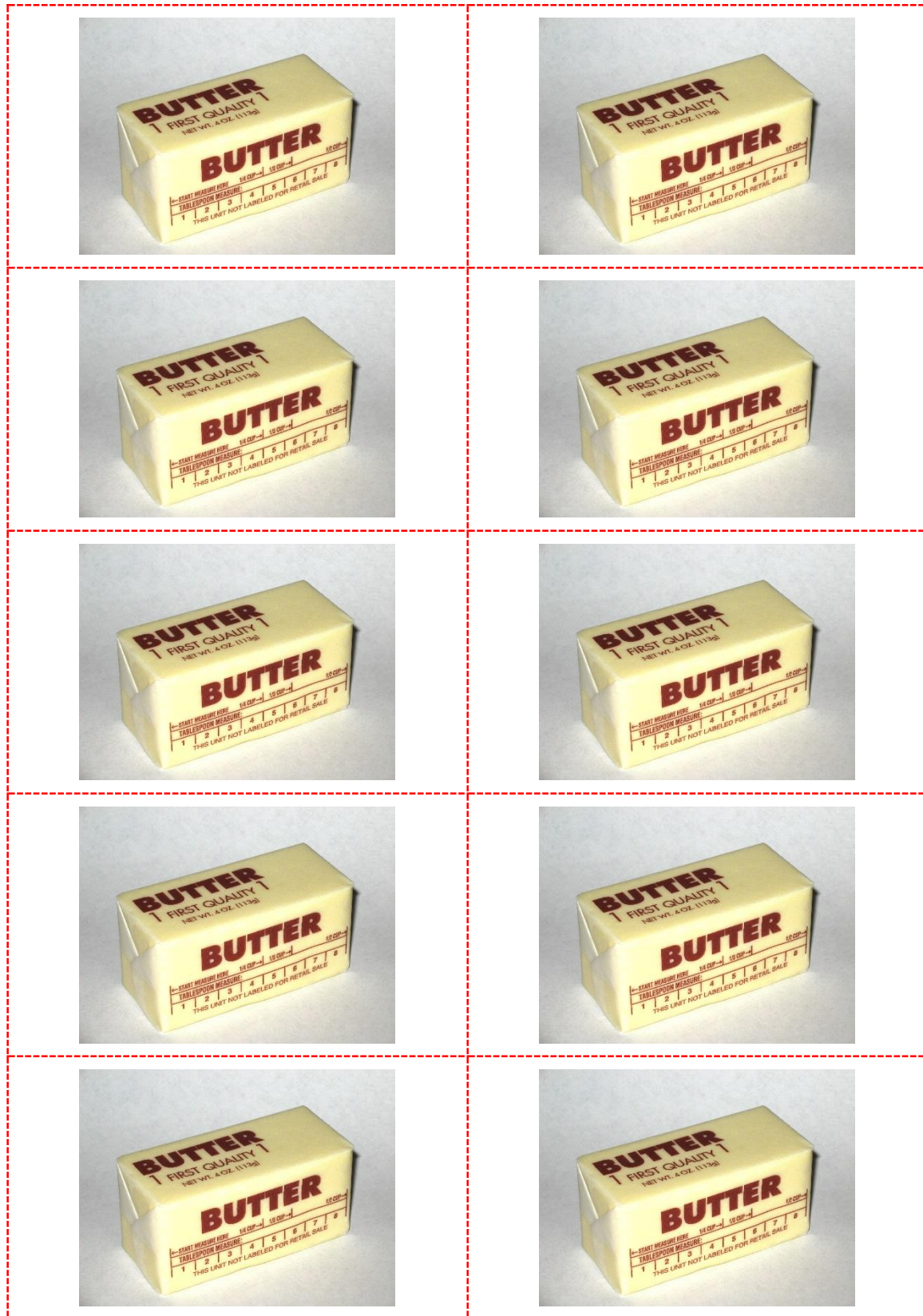
Country 3			Country 4	
Sugar	Chips		Sugar	Chips
20	0		10	0
16	2		8	2
12	4		6	4
8	6		4	6
4	8		2	8
0	10		0	10

Country 5			Country 6	
Eggs	Vanilla		Eggs	Vanilla
20	0.0		10	0
16	1.5		8	2
12	3.0		6	4
8	4.5		4	6
4	6.0		2	8
0	7.5		0	10

I. Resources:

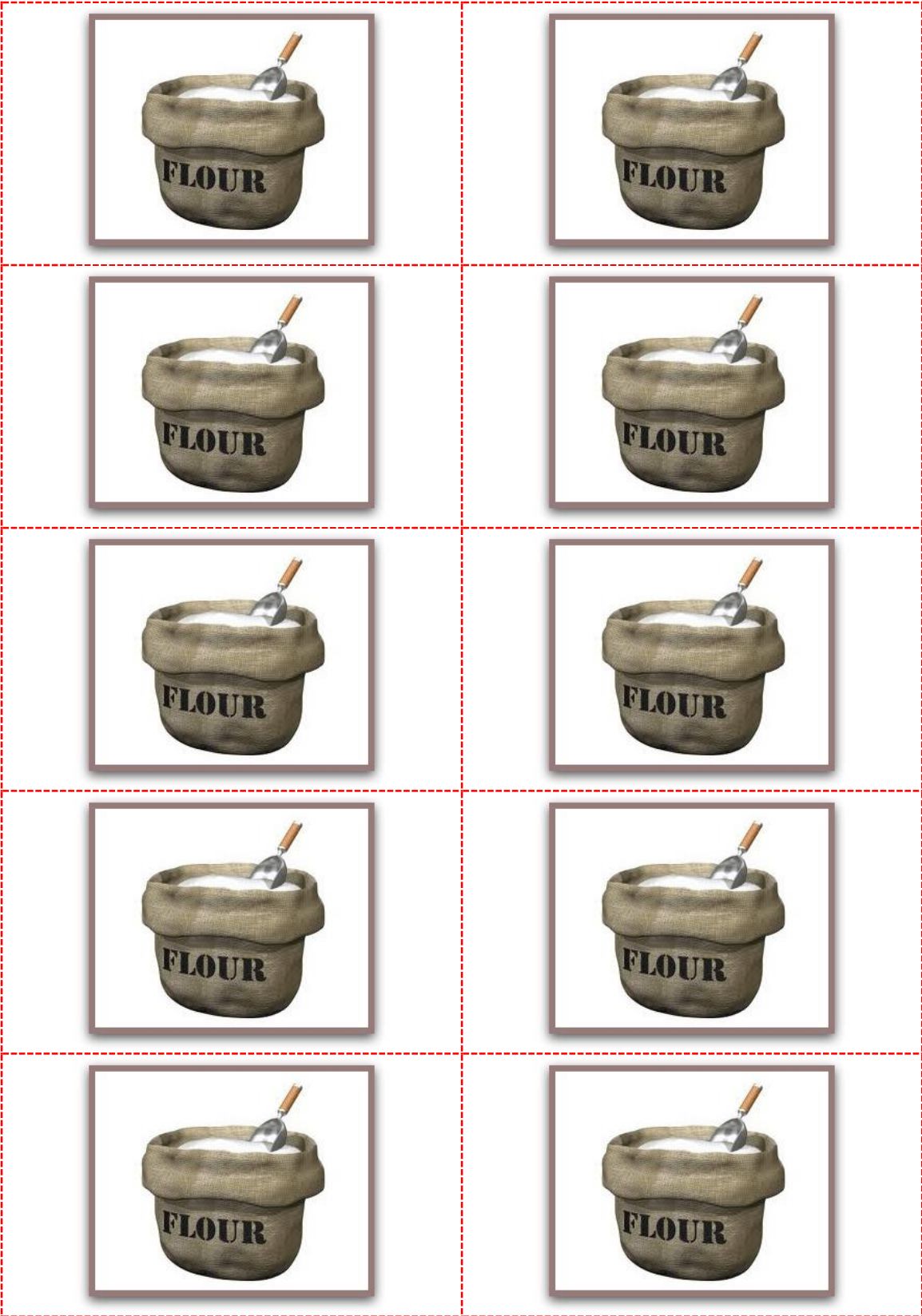
a. 30 Butter

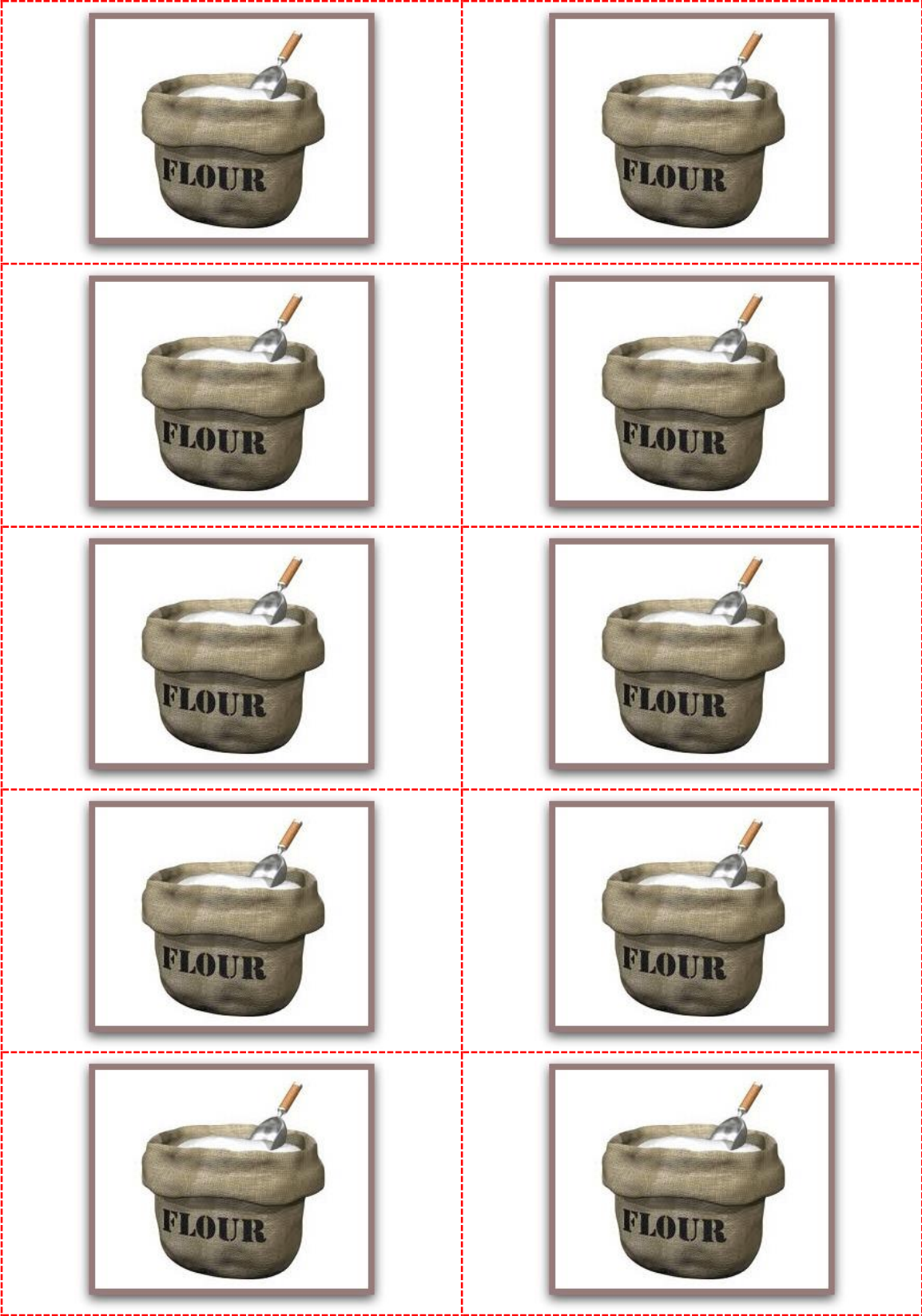


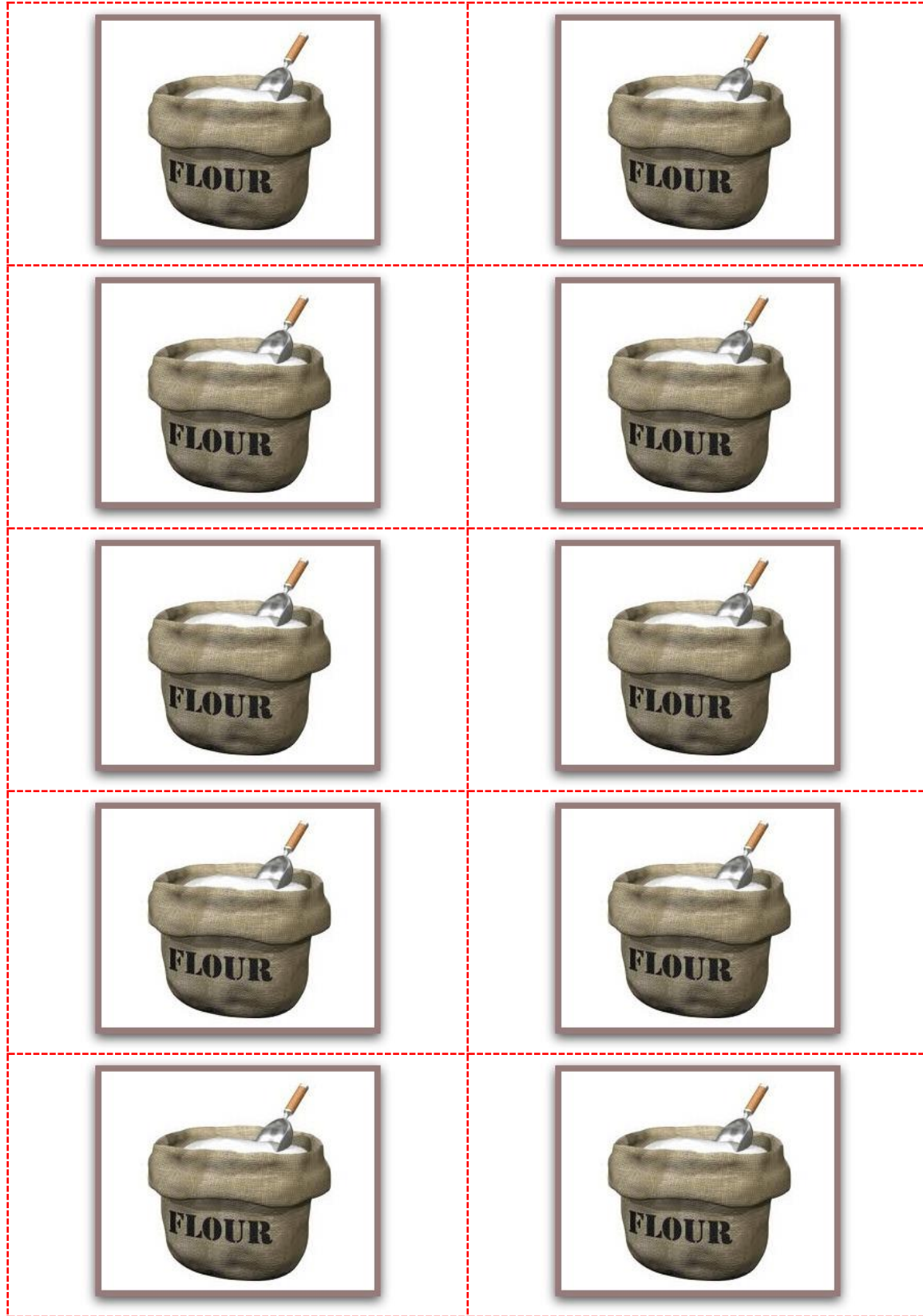




b. 30 flour







c. 30 sugar







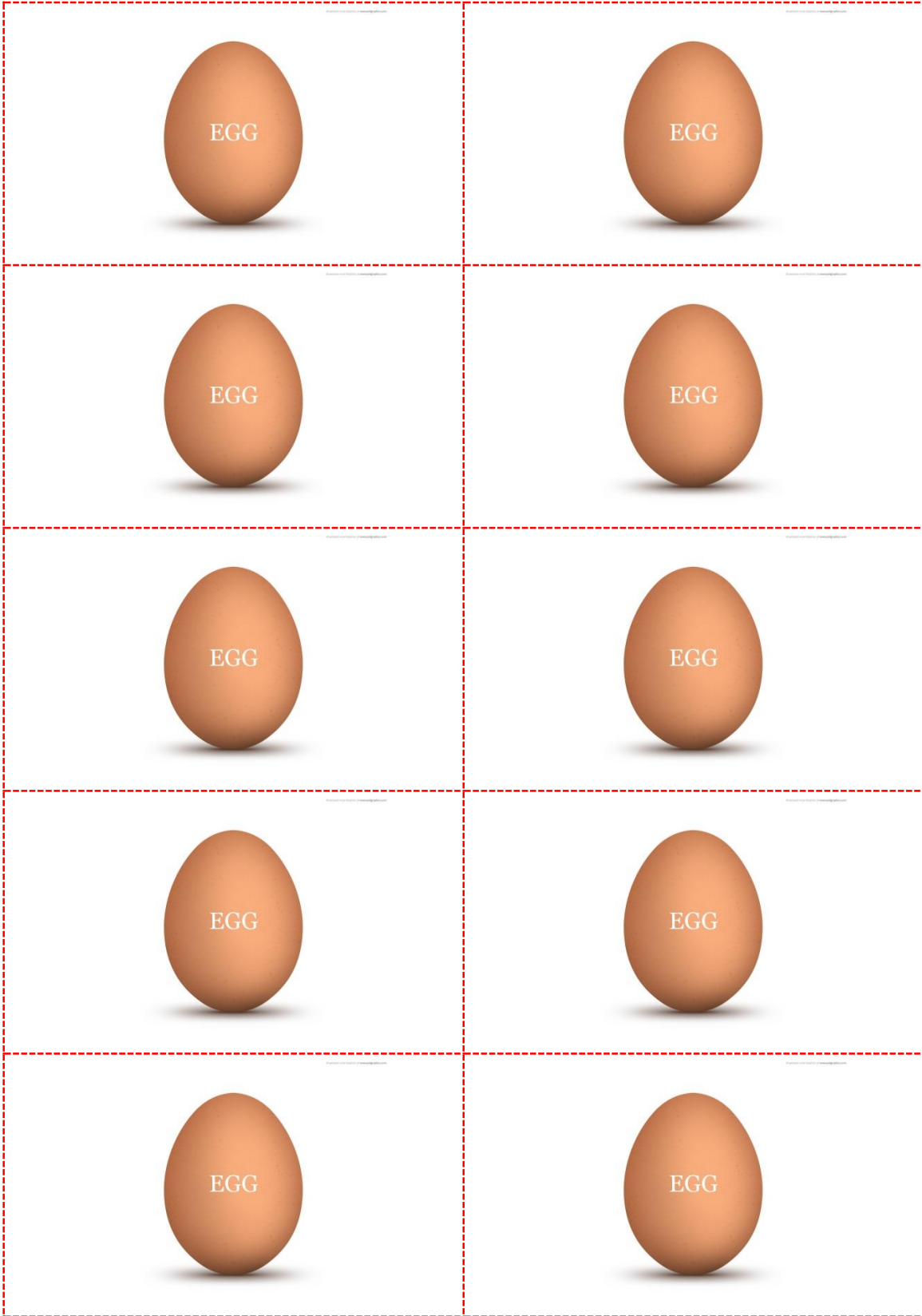
d. 20 Chocolate Chips

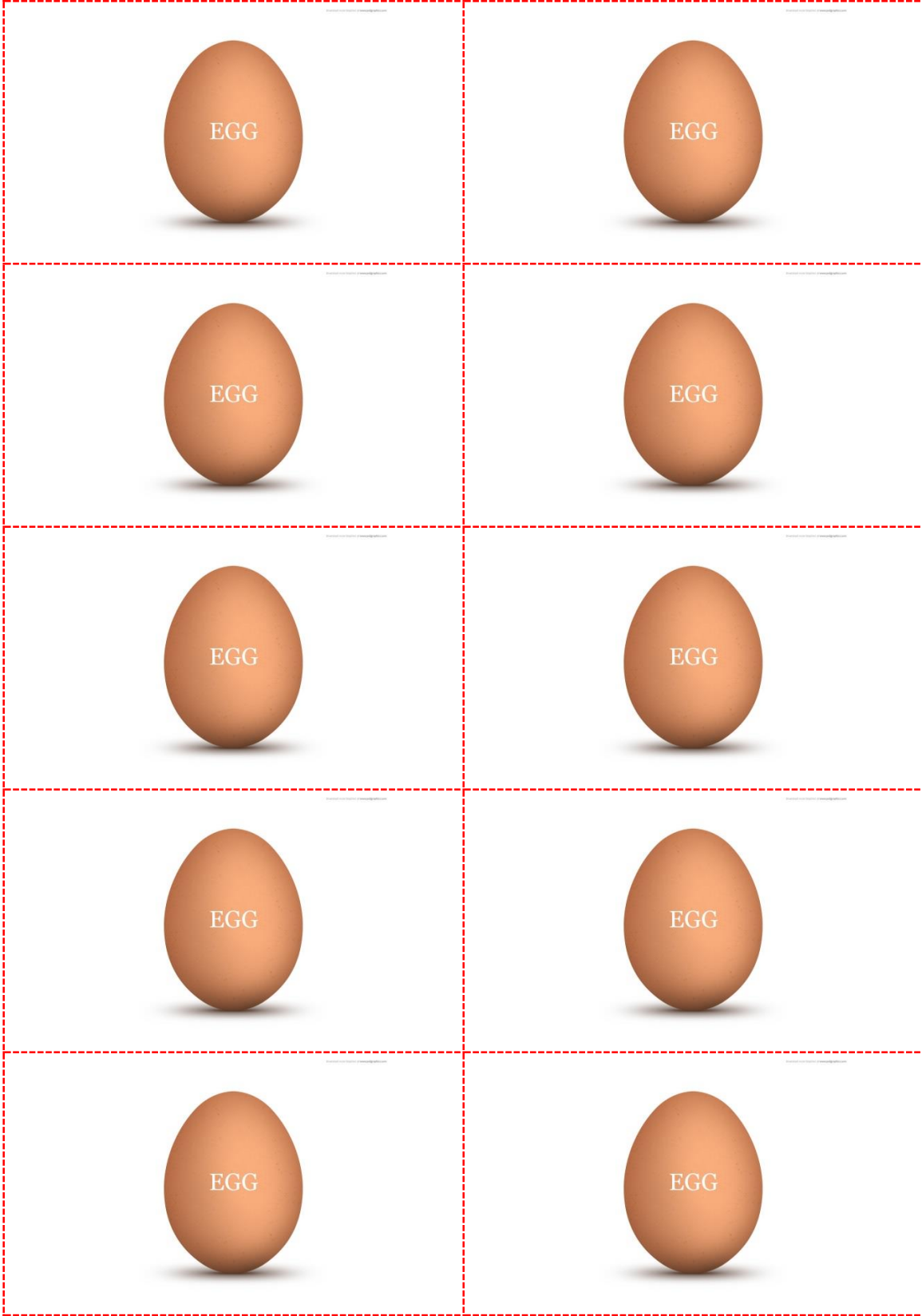


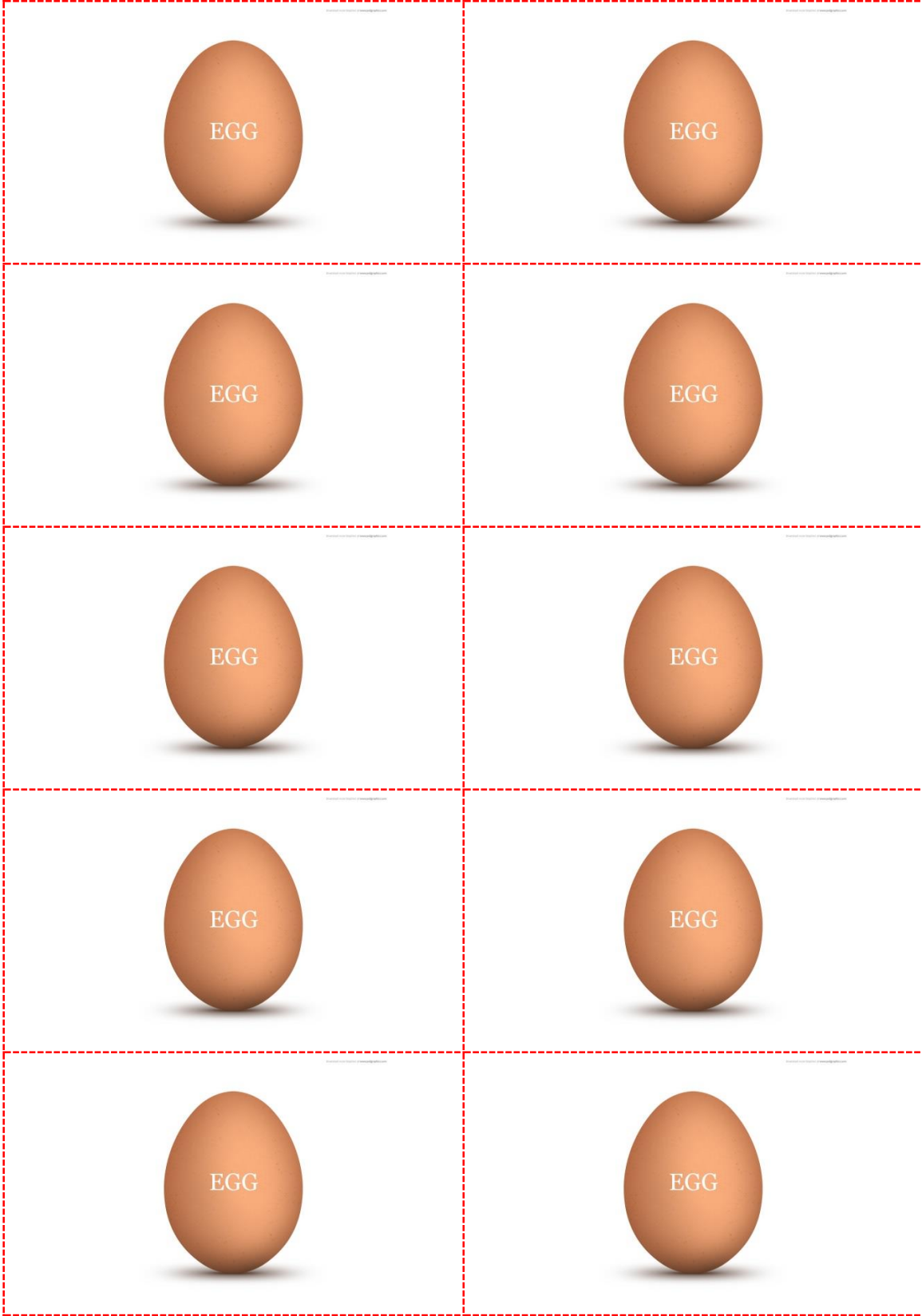




e. 30 Eggs

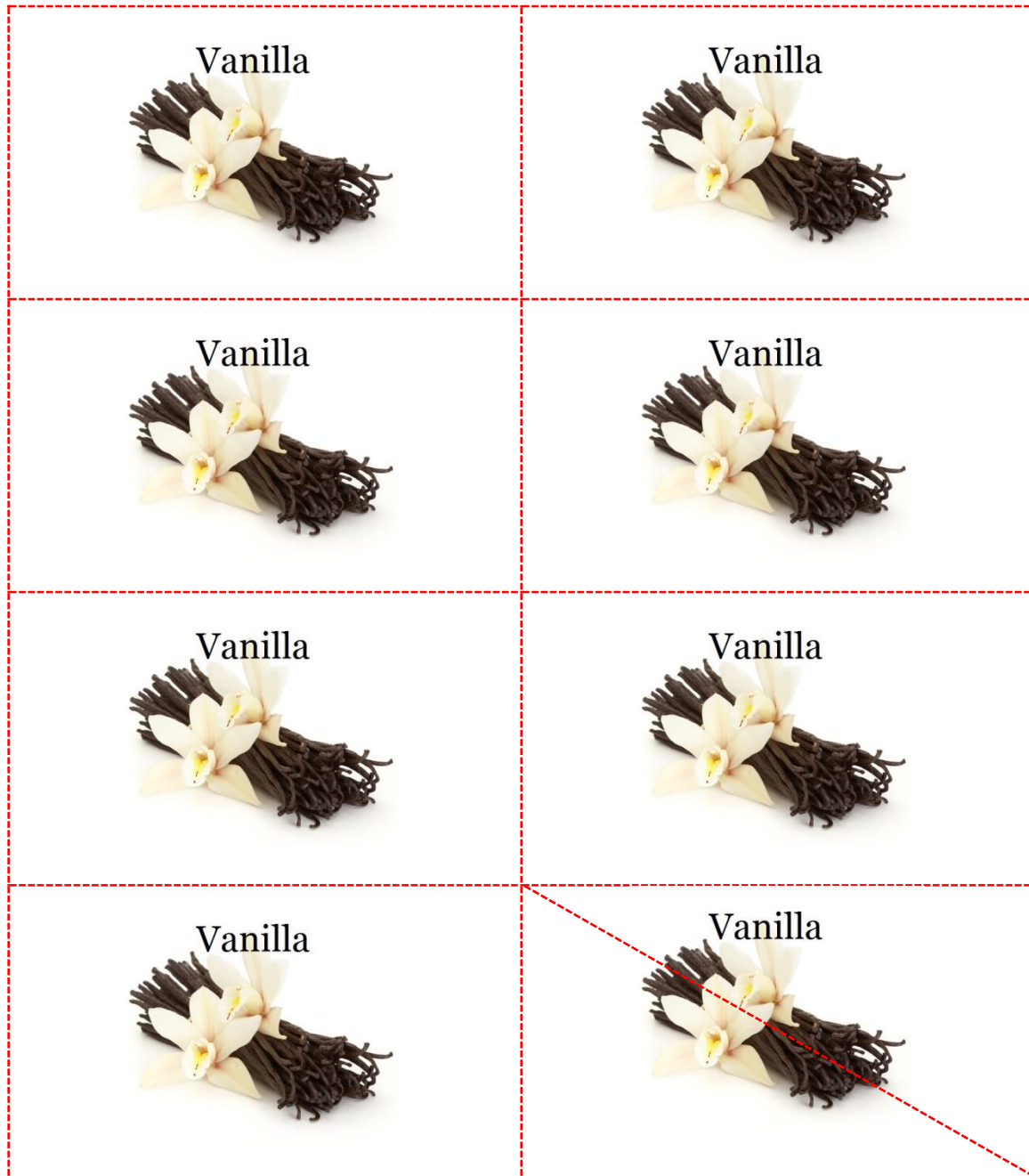






f. 18 Vanilla (cut 1 in half)





II. Trade Summary Sheets (6)

Team # ____ Trade Summary Sheet				
Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quantity

Team # ____ Trade Summary Sheet				
Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quantity

Team # ____ Trade Summary Sheet				
Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quantity

Team # ____ Trade Summary Sheet				
Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality

Team # ____ Trade Summary Sheet				
Round # ____				
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Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality

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Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality

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Round # ____				
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Round # ____				
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Round # ____				
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Round # ____				
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Team # ____ Trade Summary Sheet				
Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality

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Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality

Team # ____ Trade Summary Sheet				
Round # ____				
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Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality

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Trade Partner	Item Obtained	Quantity	Item Traded	Quality

Team # ____ Trade Summary Sheet				
Round # ____				
Trade Partner	Item Obtained	Quantity	Item Traded	Quality