Math 8

Module 4 Blackline Masters

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Lesson 4.1A Explore
Converting from an Improper Fraction to a Mixed Number

The Steps

For any improper fraction, you can follow these steps to convert to a mixed number.

Step 1: Divide the numerator by the denominator. Make note of the whole number and the remainder.

Step 2: The whole number from the division becomes the whole number in your mixed number.

Step 3: The remainder becomes the numerator of the fraction in your mixed number.

Step 4: The denominator of this fraction is the same as the denominator of the improper fraction you started with.

Let's work through an example. We'll change $\frac{13}{5}$ to a mixed number.

Step 1: Divide the numerator by the denominator. Make note of the whole number and the remainder.

$$5\overline{)\,13}\quad \begin{array}{r} 2 \\ -10 \\ \hline 3 \end{array}$$

Step 2: The whole number from the division becomes the whole number in your mixed number.

$$5\overline{)\,13}\quad \begin{array}{r} \textcircled{2}\ \text{whole} \\ -10 \\ \hline 3 \end{array} \qquad 2\frac{\square}{\square}$$

Step 3: The remainder becomes the numerator of the fraction in your mixed number.

$$5\overline{)\,13}\quad \begin{array}{r} \textcircled{2}\ \text{whole} \\ -10 \\ \hline \textcircled{3}\ \text{remainder} \end{array} \qquad 2\frac{3}{\square}$$

Step 4: The denominator of this fraction is the same as the denominator of the improper fraction you started with.

The improper fraction we started with was $\frac{13}{5}$, so our denominator is 5.

$$5\overline{)\,13}\quad \begin{array}{r} \textcircled{2}\ \text{whole} \\ -10 \\ \hline \textcircled{3}\ \text{remainder} \end{array} \qquad 2\frac{3}{5}$$

So $\frac{13}{5} = 2\frac{3}{5}$.

Lesson 4.1B Try It!
Activity 1

Complete the following multiplication problems. Your answers should be left as either *proper fractions* or *mixed numbers*, and should be *reduced* to lowest terms.

1. $\frac{2}{3} \times \frac{4}{9}$

2. $\frac{1}{5} \times \frac{3}{4}$

3. $\frac{4}{5} \times \frac{6}{13}$

4. $\frac{2}{7} \times \frac{1}{5}$

5. $\frac{8}{3} \times \frac{5}{7}$

Lesson 4.1B Try It!
Activity 2

Complete the following multiplication problems. Your answers should be left as either *proper fractions* or *mixed numbers*, and should be *reduced* to lowest terms.

1. $\frac{3}{7} \times 3$

2. $\frac{4}{5} \times 3\frac{3}{4}$

3. $\frac{9}{10} \times 8$

4. $\frac{8}{5} \times 7$

5. $2\frac{1}{4} \times \frac{6}{11}$

6. $2\frac{1}{2} \times 1\frac{1}{9}$

7. $\frac{4}{5} \times 6$

Lesson 4.1C Try It!
Activity 1

1. Write the reciprocal of each of the following numbers.

   a. $\frac{2}{3}$

   b. $\frac{1}{4}$

   c. 7

   d. $2\frac{4}{5}$

2. Complete the following division problems. Your final answers should be either proper fractions or mixed numbers, and should be reduced to lowest terms.

   a. $\frac{7}{5} \div 3$

   b. $\frac{5}{6} \div 4$

   c. $\frac{1}{2} \div \frac{2}{3}$

   d. $\frac{1}{5} \div 9$

   e. $5\frac{1}{5} \div \frac{1}{5}$

   f. $\frac{1}{4} \div 2$

g. $\frac{1}{5}$, $\frac{1}{4}$

h. $\frac{2}{5}$, $\frac{2}{3}$

i. $\frac{11}{9}$, $\frac{1}{5}$

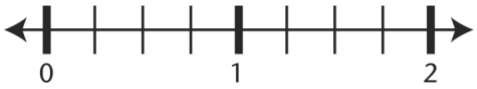
j. 7 , $2\frac{3}{4}$

3. If a student insists that $\frac{12}{35}$, $\frac{4}{5} = \frac{7}{3}$, what mistake is the student likely making?

Lesson 4.1D
Warm-up

1. Place the following fractions on the number line below.

$1\frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, \frac{7}{4}$



2. Use <, >, = to make the following statements true.

a. $\frac{2}{3} \square \frac{1}{3}$

b. $1\frac{1}{2} \square \frac{3}{2}$

c. $2 \square \frac{6}{5}$

d. $\frac{2}{3} \square \frac{3}{4}$

e. $\frac{9}{3} \square 3$

3. What operations are usually indicated by the following words?

a. total _____

b. shared _____

c. times _____

d. less than _____

Lesson 4.1D Try It!
Activity 1

Match the following example questions with the correct expressions.

Note: Each question can have more than one answer, and each answer can be used more than once.

Questions:	Expressions:
1. $\frac{4}{5}$ of a pizza needs to be divided into 7 pieces.	a. $\frac{1}{2} \div 5$
2. $\frac{2}{3}$ of seats in an arena were filled. $\frac{2}{5}$ of the seats were filled with children. What portion of the total arena seats are filled with children?	b. $\frac{2}{3} \times \frac{2}{5}$
3. Half of a fish is cut up to share with five people. How much does each person get?	c. $\frac{4}{5} \div 7$
4. Seven friends get together to pick fruit for a big party. Each person picks four fifths of a box of fruit. How much fruit do they pick?	d. $\frac{4}{5} \times 7$
5. A box of beads is half full. Each person needs $\frac{1}{5}$ of a box. How many people can get what they need from this box?	e. $\frac{1}{2} \div \frac{1}{5}$
6. Two brothers pool their allowance and buy $\frac{2}{5}$ of a box of booster card packs for a collectable card game. One brother paid $\frac{2}{3}$ of the price and gets $\frac{2}{3}$ of the cards. What portion of booster packs does he get?	f. $\frac{4}{5} \times \frac{1}{7}$
	g. $\frac{1}{2} \times \frac{1}{5}$
	h. $\frac{2}{3} \div \frac{2}{5}$

Lesson 4.1D Try It!
Activity 2

1. Give an example for each of the following, or explain why no example exists.

   a. The product of two improper fractions that is greater than 1.

   b. The quotient of a proper fraction divided by an improper fraction that is less than 1.

   c. The product of two proper fractions that is greater than 1.

2. Without calculating the actual answers, use < or > to make the following statements true.

   a. $\frac{3}{4} \cdot \frac{8}{5} \square 1$

   b. $\frac{13}{8} \cdot \frac{3}{2} \square 1$

   c. $\frac{3}{4} \cdot \frac{5}{8} \square 1$

   d. $2\frac{1}{5} \div 4\frac{2}{5} \square 1$

3. Estimate.

   a. $\frac{3}{5} \cdot \frac{4}{7}$

   b. $\frac{5}{12} \div \frac{4}{5}$

   c. $3\frac{5}{6} \div 2\frac{1}{5}$

4. A student multiplied $\frac{4}{2}$ and $\frac{4}{3}$, getting a product of $\frac{2}{3}$. Is the student's answer reasonable? Explain why or why not.

Lesson 4.1D Try It!
Activity 3

1. The Greater Vancouver Regional District consists of 21 municipalities including the City of Vancouver. Approximately half of the population of British Columbia lives in the Greater Vancouver region. About a quarter of these people live in the City of Vancouver. What fraction represents the population of the City of Vancouver in relation to the population of BC?

2. A dessert recipe you're following says that it makes 5 servings. It calls for $1\frac{1}{4}$ cups of sugar. How much sugar is in each serving?

Temperature can be measured in degrees Celsius (°C) or degrees Fahrenheit (°F). To convert between them, you can use the following formulas:

$$F = \frac{9}{5}C + 32$$

$$C = (F - 32) \div \frac{9}{5}$$

where C is the temperature in degrees Celsius and F is the temperature in degrees Fahrenheit.

3. Convert the following temperatures into degrees Fahrenheit.

   a. 30°C

   b. 10°C

4. Convert the following temperatures into degrees Celsius.

   a. 59°F

   b. 65°F

5. A hoodie that you want regularly costs $48. The store is advertising a sale where everything is $\frac{1}{3}$ off. What is the reduced price of the hoodie?

   a. Write an expression that you can use to solve the problem.

   b. Estimate the reduced price of the hoodie.

   c. Calculate the actual reduced price of the hoodie.

d. Answer the question and comment on the reasonableness of your answer.

Section Assignment 4.1 Part 1:
Theory

This assignment has to be done without the use of a calculator. Show all your work. Unless otherwise noted, please leave your answers as proper fractions or mixed numbers, and make sure they are reduced to lowest terms.

1. Give a brief description and an example for each of the following. (3 marks)

   a. improper fraction

   b. mixed number

   c. proper fraction

2. Label the following equation with the terms *divisor*, *quotient*, and *dividend*. (1 mark)

$$4\frac{1}{2} \div \frac{2}{3} = 6\frac{3}{4}$$

3. Can the reciprocal of a proper fraction be less than 1? Explain your answer. (1 mark)

Section Assignment 4.1 Part 2:
Calculations

4. Express the following mixed numbers as improper fractions. (3 marks)

_

_

_

5. Express the following improper fractions as mixed numbers. (3 marks)

a. $\frac{20}{3}$

b. $\frac{54}{12}$

c. $\frac{25}{8}$

6. Multiply. (8 marks)

a. $\frac{1}{4} \div 6$

b. $\frac{5}{6} \div \frac{6}{7}$

c. $\frac{7}{8} \div \frac{8}{9}$

d. $4\frac{2}{3} \div 5\frac{1}{4}$

7. Divide. (8 marks)

a. $\frac{1}{4} \div 6$

b. $\frac{5}{6} \div \frac{6}{7}$

c. $\frac{7}{8} \div \frac{8}{9}$

d. $4\frac{2}{3} \div 5\frac{1}{4}$

8. Complete the following operations. (12 marks)

a. $\frac{5}{6} \times \frac{6}{7}$

b. $1\frac{2}{3} \div 2\frac{3}{4}$

c. $\frac{2}{5} \div 10$

d. $4\frac{2}{3} \times 5\frac{1}{4}$

e. $\frac{2}{3} \times 3\frac{1}{3} \times 4\frac{1}{2}$

f. $\frac{5}{9} \div \frac{3}{9} \times 2$

Section Assignment 4.1 Part 3:
Estimating and Problem Solving

9. Sylvia can walk to school in $\frac{3}{4}$ h. If she rides her bike, she can get there in half the time. How long does it take Sylvia to ride her bike to school?

   a. in hours? (1 mark)

   b. in minutes? (1 mark)

10. Marina and Seth found $\frac{3}{4}$ of a pitcher of juice in the fridge. They shared $\frac{1}{2}$ of the juice equally between them. What fraction of the pitcher of juice did each of them drink?

    a. Write an expression that you could use to solve the problem. (1 mark)

b. Solve the problem. Be sure to show your work and answer the question. (1 mark)

11. Janine's regular rate of pay is $18/h. She gets paid time and a half when she works overtime. In the last two weeks, Janine worked 60 hours at regular time, and 2 hours of overtime. How much will she get paid for the last two week's work?

    a. Write an expression that you could use to solve this problem. (1 mark)

    b. Estimate approximately how much Janine will earn. (1 mark)

c. Solve the problem. Be sure to show your work and answer the question. (1 mark)

d. Is your answer reasonable? Explain. (1 mark)

12. A student completes a division problem as shown below, but the student doesn't show any work.

$$\frac{3}{4} \div \frac{1}{8} = \frac{1}{15}$$

a. Explain why the student's answer is not reasonable. (1 mark)

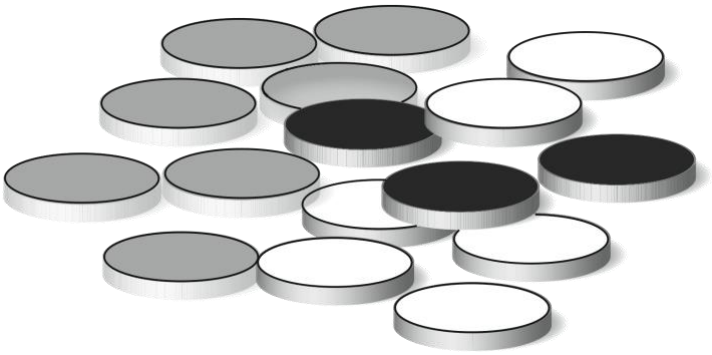
b. What mistake did the student probably make? (1 mark)

13. Create a word problem that involves the multiplication of two mixed numbers. Provide the solution for your problem. (2 marks)

Part 1: Theory	/5
Part 2: Calculations	/34
Part 3: Estimating and Problem Solving	/11
Total Marks	**/50**

Lesson 4.2A Try It!
Activity 1

1. Look at the counters below. The ratios below describe how the coloured counters relate to each other. Explain the relation for each ratio. The first one has been done for you.



a. 3:7 Number of black counters to the number of grey counters

b. 3:6 _____

_____

c. 7:16 _____

_____

d. 3:6:7 _____

_____

e. 3:8 _____

_____

2. Classify each ratio in question 1 as either a part-to-part ratio or a part-to-whole ratio.

a.

b.

c.

d.

e.

3. Write a part-to-part ratio for each of the comparisons below.

    a. There are 12 boys and 15 girls in a Grade 8 math class.

    b. To prepare pancakes from a packaged mix, you need 1 cup of water and 2 cups of pancake mix.

    c. This week, the forecast calls for three days of sunshine and four days of rain.

    d. In your dresser drawer you have one pair of pants, three pairs of shorts, and four T-shirts.

4. For each of the comparisons in question 3, write a part-to-whole ratio.

    a.

    b.

    c.

    d.

5. Which of the following pairs of ratios are proportional? How do you know?

   a. 2:4 and 6:12

   b. 1:3 and 4:15

   c. 16:30 and 8:15

Lesson 4.2A Try It!
Activity 2

1. Write a rate for each sentence below.

   a. Adrian travelled 110 kilometres in two hours.

   b. Angelique paid $11.19 for three kilograms of apples.

   c. David took his heart rate after jogging. He counted 30 beats in a 10-second time period.

2. Write a description for each rate below.

   a. $\frac{400\text{ km}}{28\text{ L}}$

   b. 70 km/h

   c. $\frac{\$72}{5\text{ h}}$

3. Calculate the unit rate for each of the rates described in question 1.

   a.

   b.

   c.

4. You can buy a package of four batteries for $6.67 or a package of 10 for $13.90. Which package is the best buy?

Lesson 4.2B
Warm-up

1. Write each fraction as a percent.

   a. $\frac{70}{100}$

   b. $\frac{6}{10}$

   c. $\frac{3}{4}$

2. Write each percent as a decimal.

   a. 85%

   b. 27%

   c. 3%

3. Write each percent as a fraction in lowest terms.

   a. 50%

   b. 60%

   c. 43%

Lesson 4.2B Try It!
Activity 4

1. Write the following fractions as percents.

   a. $\frac{171}{300}$

   b. $\frac{41}{20}$

   c. $\frac{3}{125}$

   d. $1\frac{7}{15}$

2. Write the following decimals as percents.

   a. 0.14

   b. 0.005

   c. 0.1

   d. 1.23

3. Write each of the following percents as a decimal and as a fraction.

	Decimal	Fraction
a. 0.07%		
b. $23\frac{1}{2}\%$		
c. 325%		

4. Write the following part-to-whole ratios as percents.

   a. 7:4

   b. 1:500

5. Part-to whole ratios can be written as percents. Can rates be represented by percents? Why or why not?

Lesson 4.2C Try It!
Activity 1

For the questions below, assume that the GST is 5% and the PST is 7%.

1. If the display price of an item is $120.00, what is the

    a. GST paid on the item?

    b. PST paid on the item?

2. If the price tag on a pair of jeans reads $70.00, what is the total amount of taxes? What is the check out price?

3. If the GST paid on a new collector's edition of a video game is $3.40, what was the original price?

4. If the PST paid on an item is $10.00, what was the original price of the item?

5. If the total tax on an item is $9.60, what was the original price of the item?

Lesson 4.2C Try It!
Activity 2

For the questions below, assume that the GST is 5% and the PST is 7%.

1. A street vendor buys a pair of jeans wholesale for $90.00 and sells it for $120.00 including taxes. What is the profit amount for the vendor? (GST is 5% and PST is 7%)

2. Cole bought a Blackberry for $300.00 after a 20% discount. What was the original listed price?

3. A classic video game discounted by 10% has been advertised for a further 15% discount. If the original price was $80.00, what was the price of the game after both discounts?

4. A winter jacket has a listed price of $160.00. If the store advertises a discount of 30%, how much does it cost after the discount and the taxes are added? (GST is 5% and PST is 7%)

5. In Grade 10, students face their first provincial exams. The provincial exam is worth 20% of their final mark, the remainder comes from their class grade. Alex is a student in 10th grade. If he has 70% in his class mark and 73% on his provincial exam, what mark does he get for a final grade in the course?

6. Most of the water on Earth is saltwater. Only approximately 2.5% of the water on Earth is fresh water. Two thirds of that freshwater is frozen in icecaps and glaciers. Our drinking water comes from freshwater sources such as groundwater, rivers, and lakes.

    a. What percent of the Earth's freshwater is frozen? (Express your answer to the nearest hundredth.)

b. What percent of the Earth's water is available to us for use? (Express your answer to the nearest hundredth.)

Section Assignment 4.2 Part 1:
Party Punch!

Your school is having a spring dance. Some homeroom classes have volunteered to help the Student Council out with snacks and drinks. Your class is in charge of making fruit punch to sell at the dance. The proceeds from the punch sales will go into the Student Council's budget to help contribute to other events. The Student Council has given you the following directions:

You will serve 250 mL glasses of punch.
You will charge $1.00 per glass.
You need to make enough to serve 80 people (1 glass each).

The recipe you will follow is given below.

Fruit Punch

500 mL pineapple juice

250 mL cranberry juice

1 L raspberry juice

250 mL apple juice

500 mL club soda

You will have to purchase all of the supplies to make the punch. After doing some research, your class creates a list of the best prices they could find.

Item	Cost
1 L carton of juice (any flavour)	$1.99
4 L jug of juice (any flavour)	$6.50
1 L bottle of club soda	$1.00
2 L bottle of club soda	$1.50

Based on the information given in the table, answer the following questions.

1. Look at the recipe for fruit punch. Provide a ratio for each description. (3 marks)

    a. the amount of pineapple juice to the amount of cranberry juice

    b. the amount of raspberry juice to the amount of pineapple juice to the amount of club soda

    c. the amount of apple juice to the total amount of punch

2. The ratios below describe how the amounts of juice in the recipe relate to each other. Explain a relation for each ratio. (3 marks)

    a. 250:1000

    b. 1:1

    c. 2:5

3. Give an example of a part-to-part ratio from the punch recipe. Explain why the ratio is classified as “part-to part.” (2 marks)

4. Give an example of a part-to-whole ratio from the punch recipe. Explain why the ratio is classified as “part-to-whole.” (2 marks)

5. If you follow the recipe exactly as it’s written, you won’t make enough punch for the dance.

    a. How much punch does the recipe make? How much punch do you need to make in total? (1 mark)

b. You will need to increase the yield of the recipe, but you need to keep the proportions of all the ingredients the same. Explain how you will do this, and then fill in the following table. (3 marks)

Ingredient	Amount in Original Recipe	Amount in Revised Recipe
TOTAL		

6. Since the proceeds of your punch sales are going to Student Council to be used for other events, you want to make as much profit as possible.

   a. Look at the price list for the ingredients. Calculate the unit rate for each item. Show your work in the space provided, and then fill in the table with your unit rates. (4 marks)

Item	Cost	Calculation	Unit Rate
1 L carton of juice (any flavour)	$1.99		
4 L jug of juice (any flavour)	$6.50		
1 L bottle of club soda	$1.00		
2 L bottle of club soda	$1.50		

   b. Using the price list, calculate the cost of the punch you will make for the dance. Show your work in the space provided, and then fill in the table with your costs. Remember, you can only buy ingredients in the quantities given in the price list—shop smart! (3 marks)

Ingredient	Calculation	Cost
pineapple juice		
cranberry juice		
raspberry juice		
apple juice		
club soda		
TOTAL		

c. Set up a proportion to find the cost per glass of punch. (2 marks)

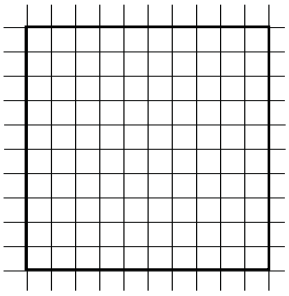
d. You will be selling punch at the dance for $1.00 per glass. What percent profit will you make on each glass? (2 marks)

e. If you sell all the punch, how much profit will you make? (1 mark)

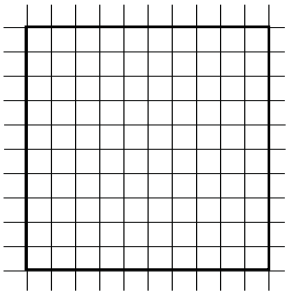
Section Assignment 4.2 Part 2:
Short Answer

1. Using the grids provided, draw a picture that represents each of the following percents. (2 marks)

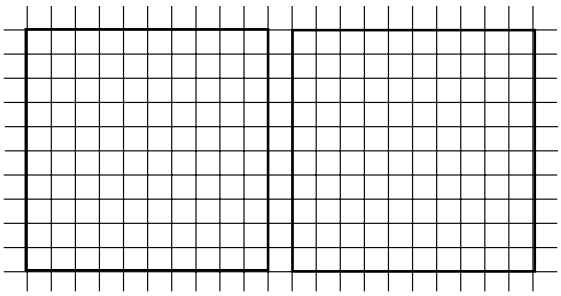
a. 0.75%



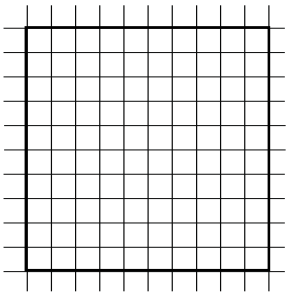
b. 73%



c. 105%



d. 25.5%



2. Describe a situation where you might see or use:

   a. percents between 0% and 1% (1 mark)

   b. percents greater than 100% (1 mark)

3. Fill in the following table by converting between ratios, fractions, decimals, and percents. Please put ratios and fractions in lowest terms. The first row is done for you as an example. (6 marks)

Part-to-Whole Ratio	Fraction	Decimal	Percent
1:2	$\frac{1}{2}$	0.5	50%
			0.4%
		0.316	
	$\frac{19}{4}$ *or* $4\frac{3}{4}$		
5001:5000			

4. For a wood-work project, each student needs 3 screws, 4 nuts, and 4 bolts.

   a. Write a part-to-part ratio that represents this situation. (1 mark)

   b. If the teacher needs to order parts for a class of 25, how many of each part will she need? Express your answer as a ratio. (1 mark)

5. Natalia drives 160 kilometres in 2.5 hours. At what speed did Natalia drive? (1 mark)

6. To determine the number of deer in a forest, a wild life biologist catches 125 deer, tags them, and releases them back into the forest. The next year, 90 deer are trapped, and it is found that 40 of those deer are tagged. Using proportions, determine approximately how many deer live in the forest. (Round your answer to the nearest whole number. (2 marks)

7. Richard wrote a math test with 30 questions. He answered 21 questions correctly. What was his percent score? (1 mark)

8. A bike is on sale for $349. What would be the total cost including tax? (2 marks)

9. Martin is shopping for a new TV. He sees the advertisement below in the newspaper. What was the original price of the TV? (2 marks)

10. A store buys jeans at a wholesale price of $31.50 per pair. They usually mark up the price of a clothing item by 65%. What is the retail price for a pair of jeans? (2 marks)

11. In Grade 10, students face their first provincial exams. The provincial exam is worth 20% of their final mark; the remainder comes from their class grade. If Bethany's class mark is 70%, what mark does she need on the provincial exam to make sure she gets at least 67% in the course? (2 marks)

Evaluation Guidelines	**Marks**
Part 1: Party Punch!	/26
Part 2: Short Answer	/24
Total Marks	**/50**

Lesson 4.3A Try It!
Activity 2

Use your calculator to express the answers as both fractions and decimals (for example: $\frac{3}{8} = 0.375$).

1. A number is picked at random from 1 to 20. What is the probability that the number is divisible by 5?

2. A drawer contains 9 pairs of socks: 3 white, 2 black, and 4 green.

   a. What is the probability that a randomly picked pair of socks is black or white?

   b. What is the probability of picking a pair of socks that is not green?

   c. What do you notice about these two answers?

3. A card is picked from a well-shuffled deck of standard playing cards. What is the probability that the card is red?

Lesson 4.3B
Warm-up

1. If you roll two dice, are the results on each die independent?

2. You have a bag with a red ball, a green ball, and a blue ball. If you draw out one ball, and then draw out a second without putting the first one back, are the two draws independent?

3. If a fair coin is tossed and a fair die is rolled, what is the number of all possible outcomes? How many of those outcomes contain an even number and heads?

4. If a card is picked from a regular deck and a fair die is rolled, what are the outcomes from the sample space that show a spade face card and an even number?

5. A coin is tossed and die is rolled. List the favourable outcomes, if you want to get heads and a number less than 5.

Lesson 4.3B Try It!
Activity 1

1. You roll a fair six-sided die.

   a. What are the possible outcomes?

   What is the probability of rolling:

   b. a 3?

   c. an even number?

   d. a number less than 3?

   e. a number greater than or equal to 4?

2. If a fair coin is tossed and a fair die is rolled, find the probability of tossing a head and rolling 2.

3. If a fair coin is tossed and a fair die is rolled:

   a. Find the probability of obtaining a tail and a number less than 3.

   b. Find the probability of obtaining a head and at least a 3.

   c. Find the probability of obtaining a tail and an odd number less than 5.

4. A bag contains four balls numbered 1 to 4. If a ball is picked at random and a card is drawn from a regular deck of 52 playing cards,

   a. Find the probability of picking an even number and a face card (Jack, Queen, King)

   b. Find the probability of an odd number and an Ace.

   c. Find the probability of a 4 and a heart.

   d. Find the probability of picking a number less than one and a diamond.

5. Two fair dice are rolled. What is the probability that the sum of the numbers that turn up is 12?
   Hint: the number of possible outcomes is 36 {(1,1), (1,2), (1,3), …, (6,4), (6,5), (6,6)}.

6. If two fair coins are tossed, what is the probability of turning up:

   a. a head or a tail?

   b. a head and a tail?

Section Assignment 4.3 Part 1:
Theory

1. Are the following pairs of events independent or dependent? Explain your answers.
   (8 marks; 2 marks each)

   a. You draw a card out of standard 52-card deck, then replace the card. Then you draw another card.

      Independent or dependent? _____

      Explanation: _____

      _____

   b. Your teacher draws a ticket out of a bag for a prize. Without putting the first ticket back in the bag, he draws another ticket.

      Independent or dependent? _____

      Explanation: _____

      _____

   c. You get a really good mark on your math test, and your family goes to your favourite restaurant for supper.

      Independent or dependent? _____

      Explanation: _____

      _____

   d. You draw a white marble from a bag of many different-coloured marbles, then you roll a fair six-sided die.

      Independent or dependent? _____

      Explanation: _____

      _____

Section Assignment 4.3 Part 2:
Using the Formula

For Part 2, write your final answer as both a fraction reduced to lowest terms, and a decimal.

2. If two fair coins are tossed:

    a. What is the probability of obtaining at least one head? (1 mark)

    b. What is the probability of obtaining one head and one tail? (1 mark)

    c. What is the probability of obtaining no heads? (1 mark)

    d. What is the probability of obtaining more that one head? (1 mark)

3. A bag contains ten colored discs: two are blue, three are green, four are red, and one is yellow. Find the probability that when one disc is randomly selected from the bag it will be:

   a. red (1 mark)

   b. blue (1 mark)

   c. yellow (1 mark)

   d. not blue (1 mark)

4. Thirty cards are numbered from 1 to 30. One card is then taken at random.

   What is the probability that the number on the card will be:

   a. a multiple of 3? (1 mark)

   b. an odd number? (1 mark)

   c. greater than 20? (1 mark)

   d. divisible by 5? (1 mark)

   e. not a multiple of 8? (1 mark)

5. If a letter is randomly chosen from the 26 letters of the alphabet and a fair die is rolled:

   a. What is the probability that a vowel and 3 are selected? Assume y is a consonant. (2 marks)

   b. What is the probability that a consonant and a multiple of 3 are selected? (2 marks)

   c. What is the probability that a z and a 6 are selected? (2 marks)

d. What is the probability that an x and an even number less than 3 are selected? (2 marks)

6. At a rifle range, Angela has a probability of 3/5 of hitting the target with any one shot. Find the probability that she first hits the target with her third shot. (3 marks)

Section Assignment 4.3 Part 3:
Drawing Tree Diagrams

7. In a school fair game, you have to spin a spinner with four sections. Then you get to choose a coloured ball out of a bag which has four different colours (white, red, green, and black). The winning combination of numbers and colours changes randomly. In one round, 4 is the lucky number. The winning combinations are spinning a 4 and choosing a:

   - white or red ball; win a bottle of water.
   - black ball; win a movie pass.

   a. Draw the complete tree diagram that lists all of the choices for the spinner and the coloured balls. On your drawing list all of the outcomes at the right. (5 marks)

b. What is the probability that you will win something? (1 mark)

c. What is the probability that you won't win anything? (1 mark)

d. What is the probability that you will win a bottle of water? (1 mark)

e. What is the probability that you will win a movie pass? (1 mark)

8. In a board game, there are three branch points on the paths. To decide which path to take, you first roll a die, then choose a card, and finally, spin a spinner.

   The first branch has two possible paths. If you roll a one or two, you go on the left path. If you roll a 3 or greater, you go on the right path.

   When you get to the next branch, you have to pick a card. There are 50 cards; 20 tell you to go to the left, and 30 tell you to go to the right.

   Finally, you have to spin a spinner with eight sections. If you spin a 7 or 8, you go on the left path, but if you spin any other number, you go on the right path.

   a. Draw the tree diagram with two choices at each branch point, and label each branch with the choice and its probability. (6 marks)

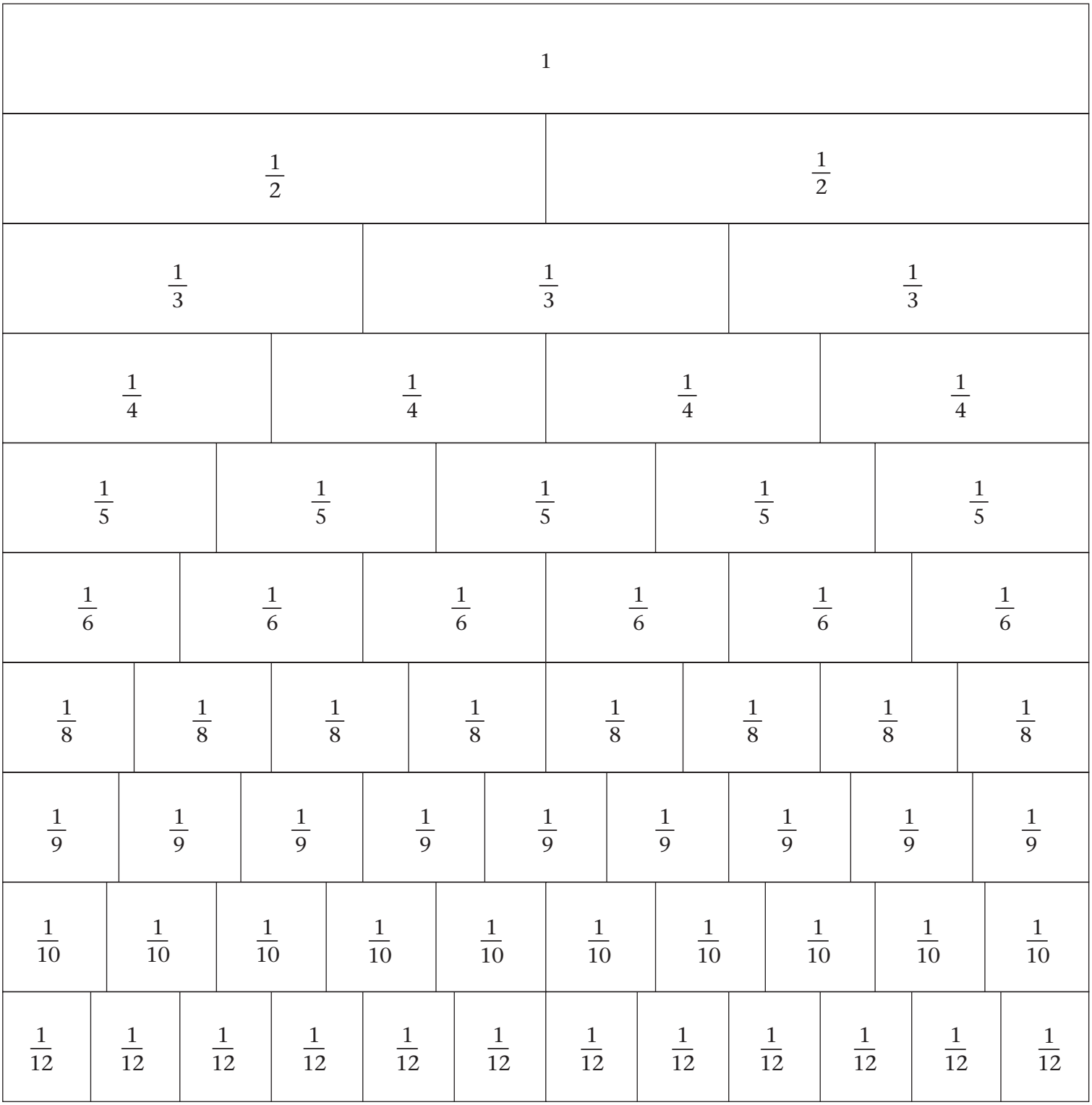
b. What is the probability that you will start on the left path after rolling the die? (1 mark)

c. What is the probability that you will take the left path for all three branches? (1 mark)

d. What is the probability that you will take the right path for all three branches? (1 mark)

e. What is the probability that you will take the path L, R, R? (1 mark)

Evaluation Guidelines	**Marks**
Part 1: Theory	/8
Part 2: Using the Formula	/24
Part 3: Drawing Tree Diagrams	/18
Total Marks	**/50**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