

Summer 6th grade Math packet

Dear Parents, Guardians and Students,

The 6th grade teachers at Rotolo Middle School are already busy preparing a great year for you! They have provided two opportunities for you to review essential math skills that will help you be successful in 6th grade. Please choose **one** of the following, Summer Packet or TenMarks online program, to complete over the summer.

Summer Packet

The first opportunity is a math packet. This will be available through the RMS website <http://rms.bps101.net/> click on students and then RMS forms. Also hard copies can be obtained through your 5th grade teacher. This summer packet will not be assessed and will not count for a grade. However, teachers will collect completed packets and the skills reviewed will be referenced throughout the school year. Please bring the completed packet to school on the first day.

Each new topic in the packet has an example and a hint on how to solve the problems on the page. Please read them carefully before answering the problems. An answer sheet with each problem worked out is also available through the RMS website <http://rms.bps101.net/> click on students and then RMS forms.

Parents, so you know how well-prepared your child is for 6th grade math, please check the answers and mark incorrect answers with a colored pen. If your child is struggling with a particular topic please encourage your child to redo the problems associated with that skill. An additional resource that your child may find helpful is www.khanacademy.org.

TenMarks Online Summer Program

Parents, we are very excited to inform you about a free program offered by TenMarks Education that will provide your child with access to a powerful, personalized summer math program designed to help them prepare for a successful school year. The expectation is for students to spend an hour per week on this program.

The program is called TenMarks Summer Math Program and here is how it works:

1. You can visit <http://summer.tenmarks.com> to pre-register for the program.
2. Before summer break, you'll receive an email with instructions on how to get started.
3. At the start of the program, your child will receive a short diagnostic assessment based on the grade s/he is completing.
4. The assessment will be automatically graded and TenMarks will create a personalized program designed to prepare your child for the upcoming year.
5. At the end of the summer, print the student report card and bring it to their 6th grade math teacher.

The TenMarks Summer Math Program will guide your child through their personalized program, one topic at a time. Each assignment contains embedded instruction (hints, video lessons, and interventions) to help your child refresh concepts from the past year and prepare for the ones ahead. This will not count for a grade, however, teachers will review the student report card and will reference these skills throughout the school year.

Please choose **one** of the above opportunities to prepare your child for a successful year in 6th grade math.

Another area of math you can help your student with is the mastery of math facts of all four operations. Fluency of math facts is essential for success in math. One way students can practice their facts is log onto xtramath.org or aaamath.com. For aaamath.com go to "sort by subject" on the left hand side and pick an operation. In the middle of the page, click on the facts.

We look forward to meeting all of you in the upcoming school year. Enjoy your summer!

The sixth grade math teachers

SECTION
1**Whole Numbers, Decimals,
and Integers****Lesson 4: Adding and Subtracting Decimals**

To add and subtract decimals, line up the decimal points. Then add or subtract as with whole numbers and bring down the decimal point.

EXAMPLE 1Add. $6.45 + 8.8$

$$\begin{array}{r} 6.45 \\ + 8.80 \\ \hline 15.25 \end{array}$$

Line up the decimal points vertically.
Write zeros as needed. Add.
Line up the decimal points.

HINT

When adding or subtracting decimals, be sure the decimal point in the answer is directly below the decimal point in the problem.

EXAMPLE 2Subtract. $\$12.50 - \1.25

$$\begin{array}{r} 12.50 \\ - 1.25 \\ \hline 11.25 \end{array}$$

Line up the decimal points vertically.
Subtract. (Borrow if necessary)
Line up the decimal points.

Practice: First Try

Add:

1. $\begin{array}{r} 3.68 \\ + 0.94 \\ \hline \end{array}$

2. $\begin{array}{r} 0.07 \\ + 17.82 \\ \hline \end{array}$

3. $\begin{array}{r} \$25.49 \\ + \$ 3.47 \\ \hline \end{array}$

4. $\begin{array}{r} \$12.49 \\ + \$ 2.79 \\ \hline \end{array}$

5. $\begin{array}{r} 10.53 \\ + 1.06 \\ \hline \end{array}$

6. $\begin{array}{r} 30.03 \\ + 2.09 \\ \hline \end{array}$

7. $\begin{array}{r} \$10.30 \\ + \$62.50 \\ \hline \end{array}$

8. $\begin{array}{r} \$0.08 \\ + \$0.95 \\ \hline \end{array}$

9. $\$5.50 + \8.89

10. $12.8 + 4.41$

11. $59.38 + 21.51$

Subtract.

12. $\begin{array}{r} \$12.00 \\ - \$ 6.50 \\ \hline \end{array}$

13. $\begin{array}{r} 8.762 \\ - 0.381 \\ \hline \end{array}$

14. $\begin{array}{r} 10.394 \\ - 0.898 \\ \hline \end{array}$

15. $\begin{array}{r} \$19.99 \\ - \$ 8.64 \\ \hline \end{array}$

16. $\begin{array}{r} 8.30 \\ - 5.73 \\ \hline \end{array}$

17. $\begin{array}{r} 52.52 \\ - 25.25 \\ \hline \end{array}$

18. $\begin{array}{r} \$20.50 \\ - \$10.25 \\ \hline \end{array}$

19. $\begin{array}{r} \$14.99 \\ - \$ 5.50 \\ \hline \end{array}$

20. $17.001 - 5.5$

21. $\$20 - \14.98

22. $25.17 - 19.62$

23. You need craft supplies. You buy beads for \$12.75, ribbon for \$4.50, felt for \$0.99, and leather cord for \$6.35.

a. How much did you spend on craft supplies?

b. You give the cashier \$30.00. How much change do you get back?

24. You have \$98 in your savings account. You withdraw \$5.50 and deposit \$22.75. What is the new balance?

SECTION

1

Whole Numbers, Decimals, and Integers

Lesson 5: Multiplying Whole Numbers

To multiply whole numbers, first write the problem vertically. Multiply by the digits of the bottom number, starting with the ones digit. Add the partial products.

EXAMPLE 1Multiply. 83×7

Long Method

$$\begin{array}{r}
 83 \\
 \times 7 \\
 \hline
 21 \quad \leftarrow 7 \times 3 \\
 560 \quad \leftarrow 7 \times 80 \\
 \hline
 581 \quad \leftarrow \text{Add.}
 \end{array}$$

EXAMPLE 2Multiply. 504×28

$$\begin{array}{r}
 ^3 \\
 504 \\
 \times 28 \\
 \hline
 4032 \quad \leftarrow 8 \times 504 \\
 10080 \quad \leftarrow 20 \times 504 \\
 \hline
 14,112 \quad \leftarrow \text{Add.}
 \end{array}$$

Practice: First Try

Multiply.

1. $\begin{array}{r} 65 \\ \times 4 \\ \hline \end{array}$

2. $\begin{array}{r} 37 \\ \times 8 \\ \hline \end{array}$

3. $\begin{array}{r} 28 \\ \times 9 \\ \hline \end{array}$

4. $\begin{array}{r} 44 \\ \times 3 \\ \hline \end{array}$

5. $\begin{array}{r} 421 \\ \times 16 \\ \hline \end{array}$

6. $\begin{array}{r} 850 \\ \times 74 \\ \hline \end{array}$

7. $\begin{array}{r} 139 \\ \times 59 \\ \hline \end{array}$

8. $\begin{array}{r} 291 \\ \times 36 \\ \hline \end{array}$

9. 210×11

10. 363×25

11. 31×6

12. 111×14

13. 16×27

14. 43×7

15. 52×13

16. 515×62

SECTION

1

**Whole Numbers, Decimals,
and Integers****Lesson 6: Multiplying with Decimals**

When multiplying with decimals, the number of decimal places in the product (answer) is equal to the total number of decimal places in the factors. (problem)

EXAMPLE 1 Multiply. 6.253×8

$$\begin{array}{r} 242 \\ 6.253 \\ \times \quad 8 \\ \hline 50.024 \end{array}$$

Count 3 decimal places in the factor: 6.253.

The product has 3 decimal places.

EXAMPLE 2 Multiply. $\$14.50 \times 0.06$

$$\begin{array}{r} 23 \\ \$14.50 \quad \leftarrow 2 \text{ places} \\ \times 0.06 \quad \leftarrow +2 \text{ places} \\ \hline \$8700 \quad \leftarrow 4 \text{ places} \\ \downarrow \\ \$.87 \end{array}$$

HINT

The number of digits to the right of the decimal point in the product is the sum of the number of digits to the right of the decimal point in the factors.

Practice : First Try

Multiply.

1. $\begin{array}{r} 3.2 \\ \times 5 \\ \hline \end{array}$

2. $\begin{array}{r} 0.05 \\ \times 9 \\ \hline \end{array}$

3. $\begin{array}{r} 0.7 \\ \times 6 \\ \hline \end{array}$

4. $\begin{array}{r} 3.01 \\ \times 9 \\ \hline \end{array}$

5. $\begin{array}{r} 3.1 \\ \times 0.3 \\ \hline \end{array}$

6. $\begin{array}{r} 1.25 \\ \times 4.4 \\ \hline \end{array}$

7. $\begin{array}{r} 4.5 \\ \times 0.8 \\ \hline \end{array}$

8. $\begin{array}{r} 0.6 \\ \times 0.09 \\ \hline \end{array}$

9. $\begin{array}{r} \$16.49 \\ \times \quad 5 \\ \hline \end{array}$

10. $\begin{array}{r} \$8.69 \\ \times 28 \\ \hline \end{array}$

11. $\begin{array}{r} \$3.50 \\ \times 0.04 \\ \hline \end{array}$

12. $\begin{array}{r} \$12.00 \\ \times 0.9 \\ \hline \end{array}$

13. 0.2×82

14. 3.986×3

15. 0.06×5

16. 92.6×1.32

17. 0.99×1.5

18. 0.374×0.3

Practice: Second Try

Multiply.

1.
$$\begin{array}{r} 0.002 \\ \times 30 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 27.1 \\ \times 15 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 3.01 \\ \times 9 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 38.175 \\ \times 2 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 28.1 \\ \times 2.2 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 6.03 \\ \times 1.24 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 0.004 \\ \times 0.5 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 2.139 \\ \times 7.2 \\ \hline \end{array}$$

9.
$$\begin{array}{r} \$13.50 \\ \times 6 \\ \hline \end{array}$$

10.
$$\begin{array}{r} \$0.99 \\ \times 12 \\ \hline \end{array}$$

11.
$$\begin{array}{r} \$14.25 \\ \times 4 \\ \hline \end{array}$$

12.
$$\begin{array}{r} \$0.75 \\ \times 18 \\ \hline \end{array}$$

13. 7.7×12

14. 19.3×6

15. 0.025×8

16. 0.61×4.8

17. 99.5×0.03

18. 34.2×6.6

19. $\$0.25 \times 0.4$

20. $\$180.00 \times 0.35$

21. $\$8.98 \times 0.5$

Extend Your Skills

22. Mrs. Harrison bought 24 folders for her students. The folders cost \$0.79 each. What was the total cost?

23. The sales tax rate on a \$24.89 item is 5%. Multiply \$24.89 by 0.05 to find the sales tax. Round to the nearest cent.

Puzzle

Draw a line from each of the problems below to its solution!

$$\begin{array}{r} 7.14 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 1.25 \\ \times 4.4 \\ \hline \end{array}$$

$$\begin{array}{r} 7.2 \\ \times 0.5 \\ \hline \end{array}$$

$$\begin{array}{r} 13.50 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 14.25 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 0.75 \\ \times 0.2 \\ \hline \end{array}$$

57

3.6

21.42

81

0.15

5.5

SECTION
1**Whole Numbers, Decimals,
and Integers****Lesson 7: Dividing Whole Numbers**

Dividing determines how many groups of the **divisor** are in the **dividend**.
Use multiplication to check a division problem.

EXAMPLE 1 Divide. $316 \div 4$

$$\begin{array}{r}
 79 \leftarrow \text{quotient} \\
 \text{Divisor } \rightarrow 4 \overline{)316} \leftarrow \text{dividend} \\
 \underline{-28} \leftarrow 7 \times 4 = 28 \\
 36 \\
 \underline{-36} \leftarrow 9 \times 4 = 36 \\
 0
 \end{array}$$

Multiply to check.

$$\begin{array}{r}
 79 \leftarrow \text{quotient} \\
 \times 4 \leftarrow \text{divisor} \\
 \hline
 316 \leftarrow \text{dividend}
 \end{array}$$

Rewrite: $316 \div 4 = 79$ **EXAMPLE 2** Divide. $6410 \div 15$

$$\begin{array}{r}
 427 \text{ R}5 \leftarrow \\
 15 \overline{)6410} \\
 \underline{-60} \leftarrow 4 \times 15 = 60 \\
 41 \\
 \underline{-30} \leftarrow 2 \times 15 = 30 \\
 110 \\
 \underline{-105} \leftarrow 7 \times 15 = 105 \\
 5 \leftarrow \text{remainder}
 \end{array}$$

Multiply to check.

$$\begin{array}{r}
 427 \leftarrow \text{quotient} \\
 \times 15 \leftarrow \text{divisor} \\
 \hline
 6405 \\
 + 5 \leftarrow \text{remainder} \\
 \hline
 6410 \leftarrow \text{dividend}
 \end{array}$$

HINT

The remainder is
never larger than
the divisor.

Rewrite: $6410 \div 15 = 427 \text{ R}5$ **Practice: First Try**

Divide.

1. $5 \overline{)85}$

2. $2 \overline{)462}$

3. $6 \overline{)3144}$

4. $4 \overline{)290}$

5. $21 \overline{)475}$

6. $18 \overline{)1152}$

7. $78 \overline{)4214}$

8. $30 \overline{)43,648}$

Practice : Second Try

6

Divide.

1. $2 \overline{)92}$

2. $4 \overline{)103}$

3. $8 \overline{)1684}$

4. $5 \overline{)5490}$

5. $37 \overline{)407}$

6. $18 \overline{)522}$

7. $506 \overline{)10,674}$

8. $481 \overline{)983}$

9. $17 \div 3$

10. $6300 \div 7$

11. $520 \div 8$

12. $8714 \div 22$

13. $744 \div 31$

14. $615 \div 13$

Use the division problem below.

$$\begin{array}{r} 8 \text{ R}2 \\ 3 \overline{)26} \end{array}$$

15. Rewrite the division problem: $\underline{\quad} \div \underline{\quad} = \underline{\quad}$.

16. Write the numbers for checking the answer to the division problem:

$$\underline{\quad} \times \underline{\quad} + \underline{\quad} = \underline{\quad}$$

17. Write the words quotient, remainder, divisor, and dividend:

$$\underline{\quad} \times \underline{\quad} + \underline{\quad} = \underline{\quad}$$

Extend Your Skills

18. There are 64 tables set up at a convention. If 1000 balloons are divided equally among all the tables, how many balloons will be placed at each table? How many balloons will be left over?

19. Explain how you can figure out the number of digits a quotient has without completing a division problem.

Puzzle

Think of a number between 100 and 200. Now follow the steps below.

Add 5.	Multiply by 2.	Subtract 4.	Divide the result by 2.	Subtract the number you started with.
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What is your answer?

SECTION
2**Fractions****Lesson 8: Adding Fractions
with Unlike Denominators**

To add fractions with unlike denominators, write the problem vertically then use the LCM to write equivalent fractions with like denominators. Finally add the fractions with like denominators.

Add $\frac{1}{8}$ and $\frac{3}{4}$ vertically.

$$\begin{array}{r} \frac{1}{8} \longrightarrow \frac{1}{8} \\ + \frac{3}{4} \longrightarrow + \frac{6}{8} \\ \hline \frac{7}{8} \end{array}$$

Write each fraction with a denominator of 8. Then add.

HINT

Always multiply the numerator and the denominator by the same number to write an equivalent fraction.

Practice: First Try

Add. Write in simplest form.

1. $\frac{1}{2} + \frac{1}{3}$

2. $\frac{3}{8} + \frac{1}{4}$

3. $\frac{2}{5} + \frac{3}{10}$

4. $\frac{2}{3} + \frac{1}{4}$

5. $\frac{2}{7} + \frac{2}{3}$

6. $\frac{1}{6} + \frac{5}{9}$

7. $\frac{3}{4} + \frac{7}{12}$

8. $\frac{3}{4} + \frac{2}{6}$

9. $\frac{4}{8} + \frac{6}{12}$

10. $\frac{3}{5} + \frac{2}{7}$

11. $\frac{1}{3} + \frac{5}{8}$

12. $\frac{3}{7} + \frac{10}{12}$

Add. Write in simplest form.

1. $\frac{3}{8} + \frac{1}{2}$

2. $\frac{1}{5} + \frac{1}{7}$

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

4. $\frac{7}{8} + \frac{3}{20}$

5. $\frac{9}{20} + \frac{3}{5}$

6. $\frac{2}{3} + \frac{1}{9}$

7. $\frac{1}{6} + \frac{7}{10}$

8. $\frac{4}{7} + \frac{1}{6}$

9. $\frac{1}{2} + \frac{5}{12}$

10. $\frac{3}{16} + \frac{5}{8}$

11. $\frac{2}{3} + \frac{7}{15}$

12. $\frac{5}{9} + \frac{5}{6}$

13. $\frac{1}{4} + \frac{7}{8}$

14. $\frac{5}{9} + \frac{7}{12}$

15. $\frac{3}{4} + \frac{3}{16}$

16. $\frac{4}{6} + \frac{9}{14}$

17. $\frac{1}{8} + \frac{1}{10}$

18. $\frac{2}{5} + \frac{1}{6}$

19. $\frac{9}{10} + \frac{1}{3}$

20. $\frac{5}{8} + \frac{1}{5}$

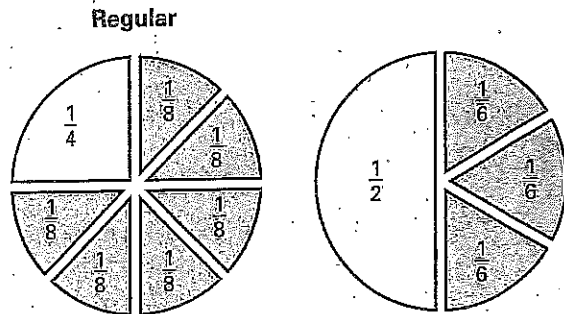
21. $\frac{5}{6} + \frac{1}{12}$

22. $\frac{1}{3} + \frac{3}{4}$

23. $\frac{5}{18} + \frac{11}{12}$

24. $\frac{7}{9} + \frac{6}{15}$

25. After a party there were some slices left from two different pizzas. How many pizzas were left altogether?



Puzzle

Fill in the numerator to complete each equation.

a. $\frac{\square}{6} + \frac{\square}{4} = \frac{2}{3}$

b. $\frac{\square}{9} + \frac{\square}{6} = \frac{4}{9}$

Name _____

Date _____

SECTION
2**Fractions****Lesson 9: Subtracting Fractions
with Unlike Denominators**

To subtract fractions with unlike denominators, write the problem vertically then use the LCM to write equivalent fractions with like denominators. Finally subtract the fractions with like denominators.

Subtract $\frac{9}{10} - \frac{1}{2}$ vertically.

$$\frac{9}{10} \longrightarrow \frac{9}{10}$$

$$\frac{1}{2} \longrightarrow \frac{5}{10}$$

$$\frac{4}{10} = \frac{2}{5}$$

Use a denominator of 10.

Write in simplest form.

HINT

Always multiply the numerator and the denominator by the same number to write an equivalent fraction.

Practice: First Try

Subtract. Write in simplest form.

1. $\frac{3}{4} - \frac{2}{3}$

2. $\frac{4}{5} - \frac{1}{2}$

3. $\frac{5}{8} - \frac{1}{4}$

4. $\frac{4}{7} - \frac{5}{12}$

5. $\frac{5}{6} - \frac{3}{8}$

6. $\frac{5}{9} - \frac{1}{6}$

7. $\frac{3}{5} - \frac{1}{10}$

8. $\frac{11}{15} - \frac{8}{12}$

9. $\frac{7}{9} - \frac{8}{18}$

10. $\frac{3}{4} - \frac{9}{12}$

11. $\frac{2}{3} - \frac{5}{8}$

12. $\frac{7}{10} - \frac{3}{5}$

13. $\frac{13}{16} - \frac{1}{4}$

14. $\frac{2}{3} - \frac{1}{7}$

15. $\frac{5}{9} - \frac{5}{12}$

Subtract. Write in simplest form.

1. $\frac{7}{8} - \frac{1}{2}$

2. $\frac{2}{3} - \frac{1}{6}$

3. $\frac{1}{2} - \frac{1}{3}$

4. $\frac{2}{5} - \frac{4}{15}$

5. $\frac{4}{5} - \frac{3}{4}$

6. $\frac{3}{4} - \frac{1}{2}$

7. $\frac{3}{8} - \frac{1}{4}$

8. $\frac{1}{4} - \frac{1}{6}$

9. $\frac{5}{8} - \frac{3}{10}$

10. $\frac{11}{12} - \frac{2}{9}$

11. $\frac{2}{3} - \frac{1}{9}$

12. $\frac{1}{6} - \frac{2}{15}$

13. $\frac{1}{2} - \frac{1}{10}$

14. $\frac{3}{5} - \frac{2}{15}$

15. $\frac{7}{12} - \frac{9}{16}$

16. $\frac{1}{3} - \frac{5}{18}$

17. $\frac{9}{10} - \frac{2}{5}$

18. $\frac{5}{6} - \frac{7}{10}$

19. $\frac{1}{4} - \frac{3}{16}$

20. $\frac{5}{14} - \frac{1}{4}$

21. $\frac{11}{12} - \frac{1}{8}$

22. $\frac{5}{12} - \frac{1}{3}$

23. $\frac{15}{16} - \frac{5}{24}$

24. $\frac{5}{6} - \frac{5}{9}$

25. Subtract $\frac{1}{2} - \frac{1}{5}$ vertically. Show your work.

26. Subtract $\frac{5}{8} - \frac{1}{3}$ vertically. Show your work.

27. Jade had $\frac{3}{5}$ liter of salt solution. She used $\frac{1}{10}$ liter for an experiment in the lab. How many liters of solution did she have left?

28. It takes $\frac{19}{20}$ hour to show a certain video on zoo animals. If the film has been running for $\frac{1}{5}$ hour, how much time is left of the video?

Puzzle

Find the missing fraction to complete each equation.

a. $\frac{3}{4} - \frac{\square}{\square} = \frac{1}{3}$

b. $\frac{\square}{\square} - \frac{1}{3} = \frac{1}{4}$

SECTION
2**Fractions****Lesson 10: Adding and Subtracting
with Mixed Numbers**

To add with mixed numbers, write the problem vertically then use the LCM to write equivalent fractions with like denominators. Finally add the fractions and whole numbers. Write in simplest form.

To subtract with mixed numbers, write the problem vertically then use the LCM to write equivalent fractions with like denominators. If necessary, rename the first fraction in order to subtract. Then subtract the fractions and whole numbers. Write in simplest form.

EXAMPLE 1Add $4\frac{5}{8}$ and $6\frac{3}{4}$

$$\begin{array}{r} 4\frac{5}{8} \longrightarrow 4\frac{5}{8} \\ +6\frac{3}{4} \longrightarrow +6\frac{6}{8} \\ \hline 10\frac{11}{8} = 10 + 1\frac{3}{8} = 11\frac{3}{8} \end{array}$$

Write $\frac{11}{8}$ as a mixed number.

HINT

If the sum of fractions is improper, rewrite it as a mixed number and add to the whole.

$$\frac{11}{8} = 1\frac{3}{8}$$

EXAMPLE 2Subtract $7\frac{1}{4} - 2\frac{1}{2}$ vertically.

$$\begin{array}{r} 7\frac{1}{4} \longrightarrow 7\frac{1}{4} \longrightarrow 6\frac{5}{4} \\ -2\frac{1}{2} \longrightarrow -2\frac{2}{4} \longrightarrow -2\frac{2}{4} \\ \hline 4\frac{3}{4} \end{array}$$

Write with like denominators. Rename $7\frac{1}{4}$ as $6\frac{5}{4}$.

Practice: First Try

Add or subtract. Write in simplest form.

1. $2\frac{3}{8} + 2\frac{1}{8}$

2. $4\frac{3}{4} + 1\frac{3}{4}$

3. $3\frac{1}{3} + 4\frac{2}{3}$

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

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

6. $3\frac{1}{2} - 1\frac{7}{8}$

7. $5\frac{1}{2} - 1\frac{3}{4}$

8. $4\frac{7}{8} - 2\frac{3}{4}$

9. $10\frac{6}{7} + 2\frac{6}{14}$

Add or subtract. Write in simplest form.

1. $4\frac{1}{3} + 5\frac{1}{3}$

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

3. $\frac{4}{5} + 4\frac{1}{4}$

4. $6\frac{3}{4} + 2\frac{1}{2}$

5. $5\frac{2}{3} - 2\frac{1}{3}$

6. $3\frac{7}{8} - 1\frac{1}{2}$

7. $4\frac{1}{4} - 3$

8. $5\frac{2}{3} - 4\frac{1}{2}$

9. $3\frac{7}{10} + 4\frac{1}{10}$

10. $2\frac{2}{5} + 8$

11. $3 - 1\frac{9}{10}$

12. $8\frac{3}{5} - 4\frac{2}{5}$

13. $1\frac{1}{4} + 3\frac{2}{3}$

14. $5\frac{5}{6} - \frac{2}{3}$

15. $1\frac{2}{3} + 5\frac{2}{3}$

16. $7\frac{4}{9} - 2\frac{5}{9}$

17. $4\frac{3}{8} + 1\frac{1}{2}$

18. $6 - 3\frac{10}{14}$

Give a complete answer.

19. For which subtraction problem below do you need to rename a mixed number? How do you know? Do both problems, show your work, and circle the renaming step.

A. $3\frac{5}{8} - 2\frac{1}{2}$

B. $7\frac{3}{8} - 5\frac{3}{4}$

20. Explain how to rename $6\frac{1}{3}$ to subtract $6\frac{1}{3} - 5\frac{2}{3}$.

Extend Your Skills

21. A recipe for cookie dough calls for $3\frac{2}{3}$ cups of flour. Jane only has $1\frac{3}{4}$ cups of flour. How many more cups of flour does Jane need to make the cookie dough?

22. A chef had $2\frac{1}{4}$ dozen onions on hand. He bought $3\frac{1}{2}$ dozen more onions to make soup. How many dozen onions did he have then?

Puzzle

Use what you know about adding and subtracting mixed numbers to find the missing numbers in the problem shown.

$$\square\frac{3}{5} + 2\frac{\square}{3} = 6\frac{4}{15}$$

Name _____

Date _____

SECTION
2

Fractions

Lesson 11: Multiplying with Fractions

To multiply fractions, multiply the numerators, and multiply the denominators. To multiply a fraction and a whole number, first write the whole number as a fraction. Write the product in simplest form.

EXAMPLE 1

Multiply $\frac{3}{4}$ and $\frac{2}{5}$.

↓ Multiply numerators.

$$\frac{3}{4} \times \frac{2}{5} = \frac{3 \times 2}{4 \times 5} = \frac{6}{20} = \frac{3}{10}$$

↑ Multiply denominators.

EXAMPLE 2

Multiply $\frac{1}{2}$ and 18.

$$\frac{1}{2} \times 18 = \frac{1}{2} \times \frac{18}{1} = \frac{1 \times 18}{2 \times 1} = \frac{18}{2} = 9$$

Write the whole number as a fraction.

Practice: First Try

Multiply. Write in simplest form.

- | | | |
|--------------------------------------|---------------------------------------|--------------------------------------|
| 1. $\frac{1}{2} \times \frac{4}{5}$ | 2. $\frac{1}{3} \times \frac{5}{12}$ | 3. $\frac{3}{8} \times \frac{3}{4}$ |
| 4. $\frac{5}{6} \times \frac{2}{3}$ | 5. $\frac{1}{4} \times \frac{2}{5}$ | 6. $\frac{2}{3} \times 12$ |
| 7. $\frac{1}{8} \times 10$ | 8. $4 \times \frac{3}{5}$ | 9. $\frac{3}{5} \times 20$ |
| 10. $8 \times \frac{3}{4}$ | 11. $18 \times \frac{3}{10}$ | 12. $\frac{4}{7} \times \frac{1}{6}$ |
| 13. $21 \times \frac{1}{7}$ | 14. $\frac{2}{7} \times 8$ | 15. $\frac{1}{16} \times 16$ |
| 16. $\frac{3}{8} \times \frac{2}{5}$ | 17. $\frac{4}{12} \times \frac{1}{2}$ | 18. $\frac{5}{21} \times 7$ |

Multiply. Write in simplest form.

- | | | | |
|--------------------------------------|---------------------------------------|---------------------------------------|--|
| 1. $\frac{7}{8} \times \frac{1}{2}$ | 2. $\frac{1}{5} \times \frac{1}{8}$ | 3. $\frac{5}{6} \times \frac{3}{5}$ | 4. $\frac{5}{12} \times 8$ |
| 5. $16 \times \frac{3}{4}$ | 6. $\frac{1}{10} \times 17$ | 7. $\frac{2}{3} \times 21$ | 8. $6 \times \frac{10}{7}$ |
| 9. $\frac{2}{5} \times \frac{2}{3}$ | 10. $\frac{3}{8} \times 10$ | 11. $\frac{7}{10} \times \frac{4}{7}$ | 12. $\frac{1}{4} \times \frac{8}{9}$ |
| 13. $25 \times \frac{2}{5}$ | 14. $\frac{1}{3} \times \frac{3}{4}$ | 15. $\frac{1}{4} \times \frac{5}{8}$ | 16. $32 \times \frac{3}{8}$ |
| 17. $24 \times \frac{1}{3}$ | 18. $\frac{7}{12} \times \frac{1}{2}$ | 19. $30 \times \frac{1}{6}$ | 20. $\frac{15}{21} \times \frac{3}{5}$ |
| 21. $\frac{5}{8} \times \frac{4}{5}$ | 22. $\frac{1}{4} \times 15$ | 23. $21 \times \frac{1}{2}$ | 24. $18 \times \frac{5}{6}$ |
| 25. $\frac{5}{9} \times 36$ | 26. $\frac{3}{14} \times \frac{7}{9}$ | 27. $20 \times \frac{3}{10}$ | 28. $\frac{7}{15} \times \frac{5}{6}$ |

Extend Your Skills

29. Sometimes the word "of" indicates multiplication.

Example: $\frac{1}{2}$ of 20 = $\frac{1}{2} \times 20 = 10$

Copy and complete: $\frac{2}{3}$ of 9 = $\underline{\quad} \times \underline{\quad} = \underline{\quad}$

30. At least $\frac{3}{4}$ of the 20 questions on a test must be answered correctly to pass. How many questions must be answered correctly to pass?

31. Simone needs to take 32 pictures for a photography class. Three fourths of the pictures must be taken outdoors. How many pictures is that?

Puzzle

Match each problem with the correct answer.

Problem	Answer
1. $\frac{3}{5} \times 25$	A. $\frac{1}{15}$
2. $\frac{1}{3} \times \frac{1}{5}$	B. 15
3. $\frac{2}{3} \times \frac{9}{15}$	C. $\frac{2}{45}$
4. $\frac{2}{9} \times \frac{1}{5}$	D. $\frac{2}{5}$

$$\begin{array}{r} 1) \quad 3.68 \\ + 0.94 \\ \hline 4.62 \end{array}$$

$$\begin{array}{r} 2) \quad 0.07 \\ + 17.82 \\ \hline 17.89 \end{array}$$

$$\begin{array}{r} 3) \quad \$25.49 \\ + \$3.47 \\ \hline \$28.96 \end{array}$$

$$\begin{array}{r} 4) \quad \$12.49 \\ + \$2.79 \\ \hline \$15.28 \end{array}$$

$$\begin{array}{r} 5) \quad 10.53 \\ + 1.06 \\ \hline 11.59 \end{array}$$

$$\begin{array}{r} 6) \quad 30.03 \\ + 2.09 \\ \hline 32.12 \end{array}$$

$$\begin{array}{r} 7) \quad \$10.30 \\ + \$62.50 \\ \hline \$72.80 \end{array}$$

$$\begin{array}{r} 8) \quad \$0.08 \\ + \$0.95 \\ \hline \$1.03 \end{array}$$

$$\begin{array}{r} 9) \quad \$5.50 \\ + .89 \\ \hline \$6.39 \end{array}$$

$$\begin{array}{r} 10) \quad 12.80 \\ + 4.41 \\ \hline 17.21 \end{array}$$

$$\begin{array}{r} 11) \quad 59.38 \\ + 21.51 \\ \hline 80.89 \end{array}$$

$$\begin{array}{r} 12) \quad \$12.00 \\ - \$6.50 \\ \hline \$5.50 \end{array}$$

$$\begin{array}{r} 13) \quad 8.62 \\ - 6.381 \\ \hline 8.381 \end{array}$$

$$\begin{array}{r} 14) \quad 10.394 \\ - 6.898 \\ \hline 9.496 \end{array}$$

$$\begin{array}{r} 15) \quad \$19.99 \\ - \$8.64 \\ \hline \$11.35 \end{array}$$

$$\begin{array}{r} 16) \quad 8.30 \\ - 5.73 \\ \hline 2.57 \end{array}$$

$$\begin{array}{r} 17) \quad 52.52 \\ - 25.25 \\ \hline 27.27 \end{array}$$

$$\begin{array}{r} 18) \quad \$20.50 \\ - \$10.25 \\ \hline \$10.25 \end{array}$$

$$\begin{array}{r} 19) \quad \$14.99 \\ - \$5.50 \\ \hline \$9.49 \end{array}$$

$$\begin{array}{r} 20) \quad 17.001 \\ - 5.500 \\ \hline 11.501 \end{array}$$

$$\begin{array}{r} 21) \quad \$20.80 \\ - \$14.98 \\ \hline \$5.02 \end{array}$$

$$\begin{array}{r} 22) \quad 28.17 \\ - 19.62 \\ \hline 5.55 \end{array}$$

$$\begin{array}{r} 23.a \quad 12.75 \\ \quad 4.50 \\ \quad .99 \\ + 6.35 \\ \hline \$24.59 \end{array}$$

$$\begin{array}{r} b \quad \$29.96 \\ - 24.59 \\ \hline \$5.41 \end{array}$$

$$\begin{array}{r} 24.a \quad \$98.00 \\ - 5.50 \\ \hline 92.50 \end{array}$$

$$\begin{array}{r} \$92.50 \\ + 22.75 \\ \hline \$115.25 \end{array}$$

$$\begin{array}{r}
 1) \quad 65 \\
 \times \quad 4 \\
 \hline
 260
 \end{array}$$

$$\begin{array}{r}
 2) \quad 5 \\
 \quad 37 \\
 \times \quad 8 \\
 \hline
 296
 \end{array}$$

$$\begin{array}{r}
 3) \quad 1 \\
 \quad 28 \\
 \times \quad 9 \\
 \hline
 252
 \end{array}$$

$$\begin{array}{r}
 4) \quad 44 \\
 \times \quad 3 \\
 \hline
 132
 \end{array}$$

$$\begin{array}{r}
 5) \quad 421 \\
 \quad 16 \\
 \hline
 2526 \\
 + 421 \\
 \hline
 6,736
 \end{array}$$

$$\begin{array}{r}
 \quad 3 \\
 6) \quad 850 \\
 \times 74 \\
 \hline
 3400 \\
 + 59500 \\
 \hline
 62,900
 \end{array}$$

$$\begin{array}{r}
 7) \quad 139 \\
 \times 59 \\
 \hline
 1251 \\
 6950 \\
 \hline
 8,201
 \end{array}$$

$$\begin{array}{r}
 8) \quad 291 \\
 \quad 36 \\
 \hline
 1746 \\
 8730 \\
 \hline
 10,476
 \end{array}$$

$$\begin{array}{r}
 9) \quad 210 \\
 \times 11 \\
 \hline
 210 \\
 2100 \\
 \hline
 2,310
 \end{array}$$

$$\begin{array}{r}
 10) \quad 363 \\
 \times 25 \\
 \hline
 1815 \\
 7260 \\
 \hline
 9,075
 \end{array}$$

$$\begin{array}{r}
 11) \quad 31 \\
 \quad 6 \\
 \hline
 186
 \end{array}$$

$$\begin{array}{r}
 12) \quad 111 \\
 \times 14 \\
 \hline
 444 \\
 1110 \\
 \hline
 1,554
 \end{array}$$

$$\begin{array}{r}
 13) \quad 16 \\
 \quad 27 \\
 \hline
 112 \\
 320 \\
 \hline
 432
 \end{array}$$

$$\begin{array}{r}
 \quad 2 \\
 14) \quad 43 \\
 \times 7 \\
 \hline
 301
 \end{array}$$

$$\begin{array}{r}
 15) \quad 52 \\
 \times 13 \\
 \hline
 156 \\
 520 \\
 \hline
 676
 \end{array}$$

$$\begin{array}{r}
 \quad 3 \\
 16) \quad 515 \\
 \times 62 \\
 \hline
 1030 \\
 30900 \\
 \hline
 31,930
 \end{array}$$

$$\begin{array}{r} 1) \quad 3.2 \\ \times 5 \\ \hline 16.0 \end{array}$$

$$\begin{array}{r} 2) \quad 0.05 \\ \times 9 \\ \hline 0.45 \end{array}$$

$$\begin{array}{r} 3) \quad 0.7 \\ \times 6 \\ \hline 4.2 \end{array}$$

$$\begin{array}{r} 4) \quad 3.01 \\ \times 9 \\ \hline 27.09 \end{array}$$

$$\begin{array}{r} 5) \quad 3.1 \\ \times 0.3 \\ \hline .93 \end{array}$$

$$\begin{array}{r} 6) \quad \cancel{1}.\cancel{2}5 \\ \times 4.4 \\ \hline 500 \\ 5000 \\ \hline 5500 \end{array}$$

$$\begin{array}{r} 7) \quad 4.5 \\ \times 0.8 \\ \hline 3.60 \end{array}$$

$$\begin{array}{r} 8) \quad 0.6 \\ \times 0.9 \\ \hline .054 \end{array}$$

$$\begin{array}{r} 9) \quad \begin{array}{c} 324 \\ \$16.49 \end{array} \\ \times 5 \\ \hline \$82.45 \end{array}$$

$$\begin{array}{r} 10) \quad \begin{array}{c} \$11 \\ 8.69 \end{array} \\ \times 28 \\ \hline 6952 \\ 17380 \\ \hline \$243.32 \end{array}$$

$$\begin{array}{r} 11) \quad \$3.50 \\ \times .04 \\ \hline \$.1400 \\ \$0.14 \end{array}$$

$$\begin{array}{r} 12) \quad \$12.00 \\ \times .9 \\ \hline \$10.800 \\ \$10.80 \end{array}$$

$$\begin{array}{r} 13) \quad 82 \\ \times 0.2 \\ \hline 16.4 \end{array}$$

$$\begin{array}{r} 14) \quad \begin{array}{c} 221 \\ 3.986 \end{array} \\ \times 3 \\ \hline 11.958 \end{array}$$

$$\begin{array}{r} 15) \quad .06 \\ \times 5 \\ \hline .30 \end{array}$$

$$\begin{array}{r} 16) \quad 92.6 \\ \times 132 \\ \hline 1852 \\ 27780 \\ 92600 \\ \hline 122232 \end{array}$$

$$\begin{array}{r} 17) \quad \begin{array}{c} 4 \\ 0.99 \end{array} \\ \times 1.5 \\ \hline 495 \\ 990 \\ \hline 1485 \end{array}$$

$$\begin{array}{r} 18) \quad \begin{array}{c} 2 \\ 0.774 \end{array} \\ \times 0.3 \\ \hline .1122 \end{array}$$

$$\begin{array}{r}
 1) \quad 0.002 \\
 \times \quad 30 \\
 \hline
 0.060 \\
 \text{or } 0.06
 \end{array}$$

$$\begin{array}{r}
 3 \\
 2) \quad 27.1 \\
 \quad \underline{15} \\
 1355 \\
 \underline{2710} \\
 406.5
 \end{array}$$

$$\begin{array}{r}
 3) \quad 3.01 \\
 \times \quad 9 \\
 \hline
 27.09
 \end{array}$$

$$\begin{array}{r}
 4) \quad 38.175 \\
 \times \quad 2 \\
 \hline
 76.350 \\
 \text{or } 76.35
 \end{array}$$

$$\begin{array}{r}
 5) \quad 28.1 \\
 \times \quad 2.2 \\
 \hline
 562 \\
 5620 \\
 \hline
 61.82
 \end{array}$$

$$\begin{array}{r}
 6) \quad 6.03 \\
 \times \quad 1.24 \\
 \hline
 2412 \\
 12060 \\
 60300 \\
 \hline
 7.4772
 \end{array}$$

$$\begin{array}{r}
 7) \quad 0.004 \\
 \quad \underline{0.5} \\
 0.0020 \\
 \text{or } 0.002
 \end{array}$$

$$\begin{array}{r}
 8) \quad 2.139 \\
 \quad \underline{7.2} \\
 4278 \\
 149730 \\
 \hline
 154008
 \end{array}$$

$$\begin{array}{r}
 3 \\
 9) \quad \$13.50 \\
 \quad \underline{6} \\
 \$81.00
 \end{array}$$

$$\begin{array}{r}
 10) \quad \$99 \\
 \times \quad 12 \\
 \hline
 198 \\
 990 \\
 \hline
 \$11.88
 \end{array}$$

$$\begin{array}{r}
 12 \\
 11) \quad \$14.25 \\
 \times \quad 4 \\
 \hline
 \$57.00
 \end{array}$$

$$\begin{array}{r}
 \\
 12) \quad \$75 \\
 \quad \underline{18} \\
 600 \\
 750 \\
 \hline
 \$13.50
 \end{array}$$

$$\begin{array}{r}
 13) \quad 7.7 \\
 \times \quad 12 \\
 \hline
 154 \\
 770 \\
 \hline
 92.4
 \end{array}$$

$$\begin{array}{r}
 \\
 14) \quad 19.3 \\
 \times \quad 6 \\
 \hline
 115.8
 \end{array}$$

$$\begin{array}{r}
 \\
 15) \quad 0.025 \\
 \times \quad 8 \\
 \hline
 0.200 \\
 \text{or } 0.2
 \end{array}$$

$$\begin{array}{r}
 16) \quad 0.61 \\
 \times \quad 4.8 \\
 \hline
 488 \\
 2440 \\
 \hline
 2.928
 \end{array}$$

$$\begin{array}{r}
 1 \\
 17) \quad 99.5 \\
 \times \quad 0.03 \\
 \hline
 2985
 \end{array}$$

$$\begin{array}{r}
 1 \\
 18) \quad 34.2 \\
 \quad \underline{6.6} \\
 2052 \\
 20520 \\
 \hline
 225.72
 \end{array}$$

$$\begin{array}{r}
 \\
 19) \quad \$25 \\
 \times \quad 0.4 \\
 \hline
 \$100 \\
 \text{or } \$10
 \end{array}$$

$$\begin{array}{r}
 4 \\
 20) \quad \$180.00 \\
 \times \quad 35 \\
 \hline
 90000 \\
 540000 \\
 \hline
 \$630000 \\
 \text{or } \$63.00
 \end{array}$$

$$\begin{array}{r}
 4 \\
 21) \quad \$8.98 \\
 \times \quad 0.5 \\
 \hline
 \$4.490 \\
 \text{or } \$4.49
 \end{array}$$

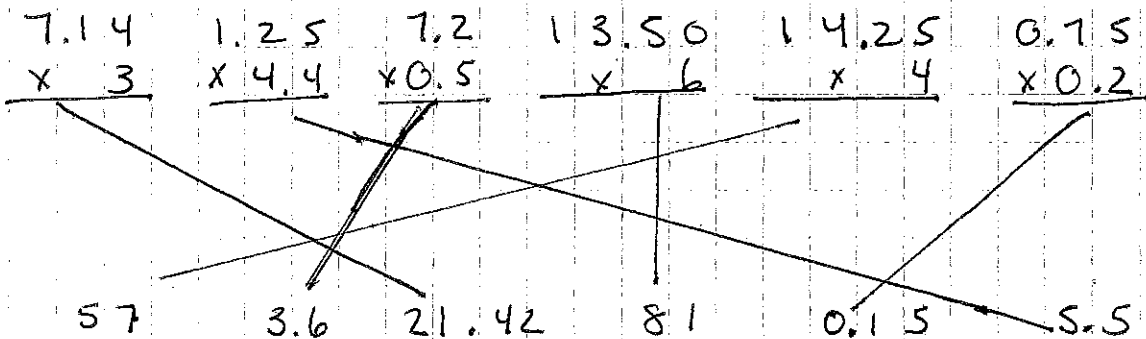
4A
cont.

$$\begin{array}{r} 22) \quad \overset{1}{\underset{3}{\$}}.79 \\ \quad \underline{24} \\ \quad \quad 316 \\ \quad \quad \underline{1580} \\ \quad \quad \quad \underline{\$} 18.96 \end{array}$$

$$\begin{array}{r} 23) \quad \overset{244}{\$} 24.89 \\ \quad \quad \underline{\times 0.05} \\ \quad \quad \quad \underline{\$} 1.2445 \end{array}$$

round \rightarrow \$1.24

Puzzle



$$1) \begin{array}{r} 17 \\ 5 \overline{) 85} \\ - 5 \downarrow \\ \hline 35 \end{array}$$

$$2) \begin{array}{r} 231 \\ 2 \overline{) 462} \\ - 4 \downarrow \\ \hline 6 \downarrow \\ - 6 \downarrow \\ \hline 2 \\ - 2 \\ \hline 0 \end{array}$$

$$3) \begin{array}{r} 524 \\ 6 \overline{) 3144} \\ - 30 \downarrow \\ \hline 14 \downarrow \\ - 12 \downarrow \\ \hline 24 \\ 24 \\ \hline 0 \end{array}$$

$$4) \begin{array}{r} 72 \text{ R } 2 \\ 4 \overline{) 290} \\ 28 \\ \hline 10 \\ 8 \\ \hline 2 \end{array}$$

$$5) \begin{array}{r} 22 \text{ R } 13 \\ 21 \overline{) 475} \\ 42 \\ \hline 55 \\ 42 \\ \hline 13 \end{array}$$

$$6) \begin{array}{r} 64 \\ 18 \overline{) 1152} \\ - 108 \downarrow \\ \hline 72 \\ 72 \\ \hline 0 \end{array}$$

$$7) \begin{array}{r} 54 \text{ R } 2 \\ 78 \overline{) 4214} \\ 390 \downarrow \\ \hline 314 \\ 312 \\ \hline 2 \end{array}$$

$$8) \begin{array}{r} 1454 \text{ R } 28 \\ 30 \overline{) 43,648} \\ - 30 \downarrow \\ \hline 136 \downarrow \\ - 120 \downarrow \\ \hline 164 \downarrow \\ - 150 \downarrow \\ \hline 148 \\ 120 \\ \hline 28 \end{array}$$

$$1) \begin{array}{r} 46 \\ 2 \overline{) 92} \\ - 8 \downarrow \\ \hline 12 \end{array}$$

$$2) \begin{array}{r} 25 \text{ R3} \\ 4 \overline{) 103} \\ - 8 \downarrow \\ \hline 23 \\ - 20 \\ \hline 3 \end{array}$$

$$3) \begin{array}{r} 210 \\ 8 \overline{) 1684} \\ - 16 \downarrow \\ \hline 8 \downarrow \\ - 8 \downarrow \\ \hline 4 \end{array} \quad \begin{array}{l} \text{(6A)} \\ 210 \text{ R4} \end{array}$$

$$4) \begin{array}{r} 1098 \\ 5 \overline{) 5490} \\ - 5 \downarrow \\ \hline 4 \downarrow \\ - 0 \downarrow \\ \hline 49 \\ - 45 \\ \hline 40 \\ - 40 \\ \hline 0 \end{array}$$

$$5) \begin{array}{r} 11 \\ 37 \overline{) 407} \\ - 37 \downarrow \\ \hline 37 \end{array}$$

$$6) \begin{array}{r} 29 \\ 18 \overline{) 522} \\ - 36 \\ \hline 162 \\ - 162 \\ \hline 0 \end{array}$$

$$7) \begin{array}{r} 21 \text{ R48} \\ 506 \overline{) 10,674} \\ - 1012 \\ \hline 554 \\ - 506 \\ \hline 48 \end{array}$$

$$8) \begin{array}{r} 2 \\ 48 \overline{) 983} \\ - 96 \\ \hline 21 \end{array} \quad \text{R21}$$

$$9) \begin{array}{r} 5 \text{ R2} \\ 3 \overline{) 17} \\ - 15 \\ \hline 2 \end{array}$$

$$10) \begin{array}{r} 900 \\ 7 \overline{) 6300} \\ - 63 \\ \hline 0 \end{array}$$

$$11) \begin{array}{r} 65 \\ 8 \overline{) 520} \\ - 48 \\ \hline 40 \end{array}$$

$$12) \begin{array}{r} 396 \text{ R2} \\ 22 \overline{) 8714} \\ - 66 \downarrow \\ \hline 211 \downarrow \\ - 198 \downarrow \\ \hline 134 \\ - 132 \\ \hline 2 \end{array}$$

$$13) \begin{array}{r} 24 \\ 3 \overline{) 744} \\ - 62 \downarrow \\ \hline 124 \\ - 124 \\ \hline 0 \end{array}$$

6A
cont

$$14) \quad \begin{array}{r} 47 \text{ R}4 \\ 13 \overline{)615} \\ \underline{52} \\ 95 \\ \underline{-91} \\ 4 \end{array}$$

$$15) \quad 26 \div 3 = 8 \text{ R}2$$

$$16) \quad 8 \times 3 + 2 = 26$$

17) quotient \times divisor + remainder = dividend

$$18) \quad \begin{array}{r} 15 \text{ R}40 \\ 64 \overline{)1000} \\ \underline{64} \\ 360 \\ \underline{320} \\ 40 \end{array}$$

15 balloons with
40 left over

19) Just figure out the first digit of the quotient, then count the remaining places for digits.

Puzzle 3

$$1) \begin{array}{r} \frac{1}{2} \times \frac{3}{3} = \frac{3}{6} \\ + \frac{1}{3} \times \frac{2}{2} = \frac{2}{6} \\ \hline \frac{5}{6} \end{array}$$

$$2) \begin{array}{r} \frac{3}{8} \times \rightarrow \frac{3}{8} \\ + \frac{1}{4} \times \frac{2}{2} = \frac{2}{8} \\ \hline \frac{5}{8} \end{array}$$

$$3) \begin{array}{r} \frac{2}{5} \times \frac{2}{2} = \frac{4}{10} \\ + \frac{3}{10} \rightarrow \frac{3}{10} \\ \hline \frac{7}{10} \end{array}$$

$$4) \begin{array}{r} \frac{2}{3} \times \frac{4}{4} = \frac{8}{12} \\ + \frac{1}{4} \times \frac{3}{3} = \frac{3}{12} \\ \hline \frac{11}{12} \end{array}$$

$$5) \begin{array}{r} \frac{2}{7} \times \frac{3}{3} = \frac{6}{21} \\ + \frac{2}{3} \times \frac{7}{7} = \frac{14}{21} \\ \hline \frac{20}{21} \end{array}$$

$$6) \begin{array}{r} \frac{1}{6} \times \frac{3}{3} = \frac{3}{18} \\ + \frac{5}{9} \times \frac{2}{2} = \frac{10}{18} \\ \hline \frac{13}{18} \end{array}$$

$$7) \begin{array}{r} \frac{3}{4} \times \frac{3}{3} = \frac{9}{12} \\ + \frac{7}{12} \rightarrow \frac{7}{12} \\ \hline \frac{16}{12} = 1 \frac{1}{3} \end{array}$$

$$8) \begin{array}{r} \frac{3}{4} \times \frac{3}{3} = \frac{9}{12} \\ + \frac{2}{6} \times \frac{2}{2} = \frac{4}{12} \\ \hline \frac{13}{12} = 1 \frac{1}{12} \end{array}$$

$$9) \begin{array}{r} \frac{4}{8} \times \frac{3}{3} = \frac{12}{24} \text{ or } \frac{1}{2} \\ + \frac{6}{12} \times \frac{2}{2} = \frac{12}{24} + \frac{1}{2} = 1 \\ \hline \frac{24}{24} = 1 \end{array}$$

$$10) \begin{array}{r} \frac{3}{5} \times \frac{7}{7} = \frac{21}{35} \\ + \frac{2}{7} \times \frac{5}{5} = \frac{10}{35} \\ \hline \frac{31}{35} \end{array}$$

$$11) \begin{array}{r} \frac{1}{3} \times \frac{8}{8} = \frac{8}{24} \\ + \frac{5}{8} \times \frac{3}{3} = \frac{15}{24} \\ \hline \frac{23}{24} \end{array}$$

$$12) \begin{array}{r} \frac{3}{7} \times \frac{12}{12} = \frac{36}{84} \\ + \frac{10}{12} \times \frac{7}{7} = \frac{70}{84} \\ \hline \frac{106}{84} = 1 \frac{11}{42} \end{array}$$

$$1) \frac{3}{8} \rightarrow \frac{3}{8}$$

$$+ \frac{1}{2} \times \frac{4}{4} = \frac{4}{8}$$

$$\frac{7}{8}$$

$$2) \frac{1}{5} \times \frac{7}{7} = \frac{7}{35}$$

$$+ \frac{1}{7} \times \frac{5}{5} = \frac{5}{35}$$

$$\frac{12}{35}$$

$$3) \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$$

$$+ \frac{4}{5} \times \frac{2}{2} = \frac{8}{10}$$

$$\frac{13}{10} = 1 \frac{3}{10}$$

$$4) \frac{1}{8} \times \frac{5}{5} = \frac{5}{40}$$

$$+ \frac{3}{20} \times \frac{2}{2} = \frac{6}{40}$$

$$\frac{41}{40} = 1 \frac{1}{40}$$

$$5) \frac{9}{20} \rightarrow \frac{9}{20}$$

$$+ \frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$$

$$\frac{21}{20} = 1 \frac{1}{20}$$

$$6) \frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$$

$$+ \frac{1}{9}$$

$$\frac{7}{9} = \frac{7}{9}$$

$$7) \frac{1}{6} \times \frac{5}{5} = \frac{5}{30}$$

$$+ \frac{1}{10} \times \frac{3}{3} = \frac{3}{30}$$

$$\frac{8}{30} = \frac{4}{15}$$

$$8) \frac{4}{7} \times \frac{6}{6} = \frac{24}{42}$$

$$+ \frac{1}{6} \times \frac{7}{7} = \frac{7}{42}$$

$$\frac{31}{42}$$

$$9) \frac{1}{2} \times \frac{6}{6} = \frac{6}{12}$$

$$+ \frac{5}{12}$$

$$\frac{11}{12}$$

$$10) \frac{3}{16} \rightarrow \frac{3}{16}$$

$$+ \frac{5}{8} \times \frac{2}{2} = \frac{10}{16}$$

$$\frac{13}{16}$$

$$11) \frac{2}{3} \times \frac{5}{5} = \frac{10}{15}$$

$$+ \frac{7}{15} \rightarrow \frac{7}{15}$$

$$\frac{17}{15} = 1 \frac{2}{15}$$

$$12) \frac{5}{9} \times \frac{2}{2} = \frac{10}{18}$$

$$+ \frac{5}{6} \times \frac{3}{3} = \frac{15}{18}$$

$$\frac{25}{18} = 1 \frac{7}{18}$$

$$13) \frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$$

$$+ \frac{7}{8} \rightarrow \frac{7}{8}$$

$$\frac{9}{8} = 1 \frac{1}{8}$$

$$14) \frac{5}{9} \times \frac{4}{4} = \frac{20}{36}$$

$$+ \frac{1}{12} \times \frac{3}{3} = \frac{3}{36}$$

$$\frac{23}{36}$$

$$15) \frac{3}{4} \times \frac{4}{4} = \frac{12}{16}$$

$$+ \frac{3}{16} \rightarrow \frac{3}{16}$$

$$\frac{15}{16}$$

8a cont)

$$\begin{array}{r}
 16) \quad \frac{4}{6} \times \frac{1}{2} = \frac{28}{42} \\
 + \frac{9}{14} \times \frac{3}{3} = \frac{27}{42} \\
 \hline
 \frac{55}{42} = 1 \frac{13}{42}
 \end{array}$$

$$\begin{array}{r}
 17) \quad \frac{1}{8} \times \frac{5}{5} = \frac{5}{40} \\
 + \frac{1}{10} \times \frac{4}{4} = \frac{4}{40} \\
 \hline
 \frac{9}{40}
 \end{array}$$

$$\begin{array}{r}
 18) \quad \frac{2}{5} \times \frac{6}{6} = \frac{12}{30} \\
 + \frac{1}{6} \times \frac{5}{5} = \frac{5}{30} \\
 \hline
 \frac{17}{30}
 \end{array}$$

$$\begin{array}{r}
 19) \quad \frac{9}{10} \times \frac{3}{3} = \frac{27}{30} \\
 + \frac{1}{3} \times \frac{10}{10} = \frac{10}{30} \\
 \hline
 \frac{37}{30} = 1 \frac{7}{30}
 \end{array}$$

$$\begin{array}{r}
 20) \quad \frac{5}{8} \times \frac{5}{5} = \frac{25}{40} \\
 + \frac{1}{5} \times \frac{8}{8} = \frac{8}{40} \\
 \hline
 \frac{33}{40}
 \end{array}$$

$$\begin{array}{r}
 21) \quad \frac{5}{6} \times \frac{2}{2} = \frac{10}{12} \\
 + \frac{1}{12} \longrightarrow \frac{1}{12} \\
 \hline
 \frac{11}{12}
 \end{array}$$

$$\begin{array}{r}
 22) \quad \frac{1}{3} \times \frac{4}{4} = \frac{4}{12} \\
 + \frac{3}{4} \times \frac{3}{3} = \frac{9}{12} \\
 \hline
 \frac{13}{12} = 1 \frac{1}{12}
 \end{array}$$

$$\begin{array}{r}
 23) \quad \frac{5}{18} \times \frac{2}{2} = \frac{10}{36} \\
 + \frac{11}{12} \times \frac{3}{3} = \frac{33}{36} \\
 \hline
 \frac{43}{36} = 1 \frac{7}{36}
 \end{array}$$

$$\begin{array}{r}
 24) \quad \frac{7}{9} \times \frac{5}{5} = \frac{35}{45} \\
 + \frac{6}{15} \times \frac{3}{3} = \frac{18}{45} \\
 \hline
 \frac{53}{45} = 1 \frac{8}{45}
 \end{array}$$

$$\begin{array}{r}
 25) \quad \frac{6}{8} \times \frac{3}{3} = \frac{18}{24} \\
 + \frac{3}{6} \times \frac{4}{4} = \frac{12}{24} \\
 \hline
 \frac{30}{24} = 1 \frac{6}{24} = 1 \frac{1}{4}
 \end{array}$$

OR

$$\begin{array}{r}
 \frac{3}{4} \rightarrow \frac{3}{4} \\
 + \frac{1}{2} \times \frac{2}{2} = \frac{2}{4} \\
 \hline
 \frac{5}{4} = 1 \frac{1}{4}
 \end{array}$$

$\frac{1}{4}$

Puzzle a $\frac{1}{6} + \frac{2}{3} = \frac{2}{3}$

b $\frac{1}{9} + \frac{2}{6} = \frac{4}{9}$

$$1) \frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$$

$$- \frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$$

$$\frac{1}{12}$$

$$2) \frac{4}{5} \times \frac{2}{2} = \frac{8}{10}$$

$$- \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$$

$$\frac{3}{10}$$

$$3) \frac{5}{8} \rightarrow \frac{5}{8}$$

$$- \frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$$

$$\frac{3}{8}$$

$$4) \frac{4}{7} \times \frac{12}{12} = \frac{48}{84}$$

$$- \frac{5}{12} \times \frac{7}{7} = \frac{35}{84}$$

$$\frac{13}{84}$$

$$5) \frac{5}{6} \times \frac{4}{4} = \frac{20}{24}$$

$$- \frac{3}{8} \times \frac{3}{3} = \frac{9}{24}$$

$$\frac{11}{24}$$

$$6) \frac{5}{9} \times \frac{2}{2} = \frac{10}{18}$$

$$- \frac{1}{6} \times \frac{3}{3} = \frac{3}{18}$$

$$\frac{7}{18}$$

$$7) \frac{3}{5} \times \frac{2}{2} = \frac{6}{10}$$

$$- \frac{1}{10} \rightarrow \frac{1}{10}$$

$$\frac{5}{10} \div \frac{5}{5} = \frac{1}{2}$$

$$8) \frac{11}{15} \times \frac{4}{4} = \frac{44}{60}$$

$$- \frac{8}{12} \times \frac{5}{5} = \frac{40}{60}$$

$$\frac{4}{60} \div \frac{4}{4} = \frac{1}{15}$$

$$9) \frac{7}{9} \times \frac{2}{2} = \frac{14}{18}$$

$$- \frac{8}{18}$$

$$\frac{6}{18} \div \frac{6}{6} = \frac{1}{3}$$

$$10) \frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$$

$$- \frac{9}{12} \rightarrow \frac{9}{12}$$

$$0$$

$$11) \frac{2}{3} \times \frac{8}{8} = \frac{16}{24}$$

$$- \frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$$

$$\frac{1}{24}$$

$$12) \frac{7}{10} \rightarrow \frac{7}{10}$$

$$- \frac{3}{5} \times \frac{2}{2} = \frac{6}{10}$$

$$\frac{1}{10}$$

$$13) \frac{13}{16} \rightarrow \frac{13}{16}$$

$$- \frac{1}{4} \times \frac{4}{4} = \frac{4}{16}$$

$$\frac{9}{16}$$

$$14) \frac{2}{3} \times \frac{7}{7} = \frac{14}{21}$$

$$- \frac{1}{7} \times \frac{3}{3} = \frac{3}{21}$$

$$\frac{11}{21}$$

$$15) \frac{5}{9} \times \frac{4}{4} = \frac{20}{36}$$

$$- \frac{5}{12} \times \frac{3}{3} = \frac{15}{36}$$

$$\frac{5}{36}$$

$$1) \frac{1}{8} \rightarrow \frac{1}{8}$$

$$- \frac{1}{2} \times \frac{4}{4} = \frac{4}{8}$$

$$\frac{3}{8}$$

$$2) \frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$$

$$- \frac{1}{6} \rightarrow \frac{1}{6}$$

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

$$3) \frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$$

$$- \frac{1}{3} \times \frac{2}{2} = \frac{2}{6}$$

$$\frac{1}{6}$$

(10 A)

$$4) \frac{2}{5} \times \frac{3}{3} = \frac{6}{15}$$

$$- \frac{4}{15} \rightarrow \frac{4}{15}$$

$$\frac{2}{15}$$

$$5) \frac{4}{5} \times \frac{4}{4} = \frac{16}{20}$$

$$- \frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$$

$$\frac{1}{20}$$

$$6) \frac{3}{4} \rightarrow \frac{3}{4}$$

$$- \frac{1}{2} \times \frac{2}{2} = \frac{2}{4}$$

$$\frac{1}{4}$$

$$7) \frac{3}{8} \rightarrow \frac{3}{8}$$

$$- \frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$$

$$\frac{1}{8}$$

$$8) \frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

$$- \frac{1}{6} \times \frac{2}{2} = \frac{2}{12}$$

$$\frac{1}{12}$$

$$9) \frac{5}{8} \times \frac{5}{5} = \frac{25}{40}$$

$$- \frac{3}{10} \times \frac{4}{4} = \frac{12}{40}$$

$$\frac{13}{40}$$

$$10) \frac{11}{12} \times \frac{3}{3} = \frac{33}{36}$$

$$- \frac{2}{9} \times \frac{4}{4} = \frac{8}{36}$$

$$\frac{25}{36}$$

$$11) \frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$$

$$- \frac{1}{9} \rightarrow \frac{1}{9}$$

$$\frac{5}{9}$$

$$12) \frac{1}{6} \times \frac{5}{5} = \frac{5}{30}$$

$$- \frac{2}{15} \times \frac{2}{2} = \frac{4}{30}$$

$$\frac{1}{30}$$

$$13) \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$$

$$- \frac{1}{10} \rightarrow \frac{1}{10}$$

$$\frac{4}{10} \div \frac{2}{2} = \frac{2}{5}$$

$$14) \frac{3}{5} \times \frac{3}{3} = \frac{9}{15}$$

$$- \frac{2}{15} \rightarrow \frac{2}{15}$$

$$\frac{1}{15}$$

$$15) \frac{7}{12} \times \frac{4}{4} = \frac{28}{48}$$

$$- \frac{9}{16} \times \frac{3}{3} = \frac{27}{48}$$

$$\frac{1}{48}$$

$$16) \frac{1}{3} \times \frac{6}{6} = \frac{6}{18}$$

$$- \frac{5}{18} \rightarrow \frac{5}{18}$$

$$\frac{1}{18}$$

$$17) \frac{9}{10} \rightarrow \frac{9}{10}$$

$$- \frac{2}{5} \times \frac{2}{2} = \frac{4}{10}$$

$$\frac{5}{10} \div \frac{5}{5} = \frac{1}{2}$$

$$18) \frac{5}{6} \times \frac{5}{5} = \frac{25}{30}$$

$$- \frac{1}{10} \times \frac{3}{3} = \frac{3}{30}$$

$$\frac{4}{30} \div \frac{2}{2} = \frac{2}{15}$$

$$19) \frac{1}{4} \times \frac{4}{4} = \frac{4}{16}$$

$$- \frac{3}{16} \rightarrow \frac{3}{16}$$

$$\frac{1}{16}$$

$$20) \frac{5}{14} \times \frac{2}{2} = \frac{10}{28}$$

$$- \frac{1}{4} \times \frac{7}{7} = \frac{7}{28}$$

$$\frac{3}{28}$$

$$21) \frac{11}{12} \times \frac{2}{2} = \frac{22}{24}$$

$$- \frac{1}{8} \times \frac{3}{3} = \frac{3}{24}$$

$$\frac{19}{24}$$

$$22) \frac{5}{12} \rightarrow \frac{5}{12}$$

$$- \frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$$

$$\frac{1}{12}$$

$$23) \frac{15}{16} \times \frac{3}{3} = \frac{45}{48}$$

$$- \frac{5}{24} \times \frac{2}{2} = \frac{10}{48}$$

$$\frac{35}{48}$$

$$24) \frac{5}{6} \times \frac{3}{3} = \frac{15}{18}$$

$$- \frac{5}{9} \times \frac{2}{2} = \frac{10}{18}$$

$$\frac{5}{18}$$

10A
cont

$$27) \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$$
$$\underline{- \frac{1}{5} \times \frac{2}{2} = \frac{2}{10}}$$
$$\frac{3}{10}$$

$$28) \frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$$
$$\underline{- \frac{1}{3} \times \frac{8}{8} = \frac{8}{24}}$$
$$\frac{7}{24}$$

$$29) \frac{3}{5} \times \frac{2}{2} = \frac{6}{10}$$
$$\underline{- \frac{1}{10} \rightarrow \frac{1}{10}}$$
$$\frac{5}{10} \div \frac{5}{5} = \frac{1}{2} \text{ liter}$$

$$30) \frac{19}{20} \rightarrow \frac{19}{20}$$
$$\underline{- \frac{1}{5} \times \frac{4}{4} = \frac{4}{20}}$$
$$\frac{15}{20} \div \frac{5}{5} = \frac{3}{4} \text{ of an hour}$$

Puzzle

$$a) \frac{3}{4} - \frac{5}{12} = \frac{1}{3}$$

$$b) \frac{7}{12} - \frac{1}{3} = \frac{1}{4}$$

11a

$$\begin{array}{r}
 1) \quad 2\frac{3}{8} \\
 + 2\frac{1}{8} \\
 \hline
 4\frac{4}{8} \\
 \downarrow \\
 4\frac{1}{2}
 \end{array}
 \quad \frac{4}{8} \div \frac{4}{4} = \frac{1}{2}$$

$$\begin{array}{r}
 2) \quad 4\frac{3}{4} \\
 + 1\frac{3}{4} \\
 \hline
 5\frac{6}{4} \\
 \downarrow \\
 6\frac{1}{2}
 \end{array}
 \quad \frac{6}{4} = 1\frac{1}{2}$$

$$\begin{array}{r}
 3) \quad 3\frac{1}{3} \\
 + 4\frac{2}{3} \\
 \hline
 7\frac{3}{3} \\
 \downarrow \\
 8
 \end{array}
 \quad \frac{3}{3} = 1$$

$$\begin{array}{r}
 4) \quad 3\frac{1}{2} \times \frac{2}{2} = \frac{2}{4} \\
 5\frac{1}{4} \rightarrow \frac{1}{4} \\
 \hline
 00 \\
 00 \\
 \hline
 00\frac{3}{4}
 \end{array}
 \quad \frac{3}{4}$$

$$\begin{array}{r}
 5) \quad 5\frac{3}{4} \\
 - 2\frac{1}{4} \\
 \hline
 3\frac{2}{4} \\
 \downarrow \\
 3\frac{1}{2}
 \end{array}
 \quad \frac{2}{4} \div \frac{2}{2} = \frac{1}{2}$$

$$\begin{array}{r}
 6) \quad 3\frac{1}{2} \times \frac{4}{4} = \frac{22}{8} \\
 3\frac{1}{8} = 2\frac{12}{8} \\
 - 1\frac{7}{8} \quad - 1\frac{7}{8} \quad 1\frac{7}{8} \\
 \hline
 1\frac{5}{8}
 \end{array}$$

$$\begin{array}{r}
 7) \quad 5\frac{1}{2} \times \frac{2}{2} = 5\frac{2}{4} \\
 - 1\frac{3}{4} \Rightarrow -1\frac{3}{4} \\
 \hline
 3\frac{3}{4}
 \end{array}$$

$$\begin{array}{r}
 8) \quad 4\frac{7}{8} \Rightarrow 4\frac{7}{8} \\
 - 2\frac{3}{4} \times \frac{2}{2} = 2\frac{6}{8} \\
 \hline
 2\frac{1}{8}
 \end{array}$$

$$\begin{array}{r}
 9) \quad 10\frac{6}{7} \times \frac{2}{2} = \frac{12}{14} \\
 + 2\frac{6}{14} \rightarrow \frac{6}{14} \\
 \hline
 12 \\
 \downarrow \\
 13\frac{2}{7}
 \end{array}
 \quad \frac{12}{14} = 1\frac{2}{7}$$

1) $4\frac{1}{3} + 5\frac{1}{3} = 9\frac{2}{3}$

2) $1\frac{2}{5} + 3\frac{4}{5} = 4\frac{6}{5} = 5\frac{1}{5}$

3) $\frac{4}{5} \times \frac{4}{4} = \frac{16}{20}$
 $4\frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$
 $4\frac{21}{20} = 5\frac{1}{20}$

4) $6\frac{3}{4} \rightarrow \frac{3}{4}$
 $2\frac{1}{2} \times \frac{2}{2} = \frac{2}{4}$
 $8\frac{5}{4} = 9\frac{1}{4}$

5) $5\frac{2}{3} - 2\frac{1}{3} = 3\frac{1}{3}$

6) $3\frac{7}{8} \rightarrow 3\frac{7}{8}$
 $1\frac{1}{2} \times \frac{4}{4} = \frac{4}{8}$
 $2\frac{3}{8}$

7) $4\frac{1}{4} - 3\frac{0}{4} = 1\frac{1}{4}$

8) $5\frac{2}{3} \times \frac{2}{2} = 5\frac{4}{6}$
 $4\frac{1}{2} \times \frac{3}{3} = 4\frac{3}{6}$
 $1\frac{1}{6}$

9) $3\frac{7}{10} + 4\frac{1}{10} = 7\frac{8}{10} = 7\frac{4}{5}$
 $\frac{8}{10} \cdot \frac{2}{2} = \frac{4}{5}$

10) $2\frac{2}{5} + 8\frac{0}{5} = 10\frac{2}{5}$

11) $3\frac{0}{10} \rightarrow \frac{7}{10}$
 $3\frac{0}{10} - 1\frac{9}{10} = 2\frac{10}{10} - 1\frac{9}{10} = 1\frac{1}{10}$

12) $8\frac{3}{5} - 4\frac{2}{5} = 4\frac{1}{5}$

13) $1\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$
 $3\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$
 $4\frac{11}{12} = 4\frac{11}{12}$

14) $5\frac{5}{6} \rightarrow 5\frac{5}{6}$
 $\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$
 $5\frac{1}{6}$

15) $1\frac{2}{3} + 5\frac{2}{3} = 6\frac{4}{3} = 7\frac{1}{3}$
 $\frac{4}{3} = 1\frac{1}{3}$

16) $6\frac{7}{9} - 2\frac{5}{9} = 4\frac{2}{9}$

$$17) \quad 4\frac{3}{8} \rightarrow \frac{3}{8}$$

$$+ \quad 1\frac{1}{2} \times \frac{4}{4} = \frac{4}{8}$$

$$\hline 5 \quad \frac{7}{8} = 5\frac{7}{8}$$

$$18) \quad \overset{5}{\cancel{6}} \overset{10}{\cancel{14}} = 5\frac{14}{14}$$

$$- \quad 3\frac{10}{14} - 3\frac{10}{14}$$

$$\hline 2\frac{4}{14} \quad \frac{4 \cdot 2 \cdot 2}{14 \cdot 2 \cdot 2}$$

$$\hline 2\frac{2}{7}$$

12a
cont

$$19) \quad 3\frac{5}{8} \Rightarrow 3\frac{5}{8} \quad \text{no renaming}$$

$$- \quad 2\frac{1}{2} \times \frac{4}{4} = 2\frac{4}{8}$$

$$\hline 1\frac{1}{8}$$

$$7\frac{3}{8} \rightarrow \overset{6}{\cancel{7}} \overset{3}{\cancel{8}} = 6\frac{11}{8} \quad \text{renaming}$$

$$- \quad 5\frac{3}{4} \times \frac{2}{2} = 5\frac{6}{8} - 5\frac{6}{8}$$

$$\hline 1\frac{5}{8}$$

20) rename: $6\frac{1}{3}$ to $5 + \frac{1}{3}$ make improper: $1\frac{1}{3}$ to $\frac{4}{3}$ subtract:

$$\begin{array}{r} 5\frac{4}{3} \\ - 5\frac{2}{3} \\ \hline 2\frac{2}{3} \end{array}$$

$$21) \quad 3\frac{2}{3} \times \frac{4}{4} = \overset{2}{\cancel{3}} \overset{8}{\cancel{12}} = 2\frac{20}{12}$$

$$- \quad 1\frac{3}{4} \times \frac{3}{3} = 1\frac{9}{12} - 1\frac{9}{12}$$

$$\hline 1\frac{11}{12}$$

$1\frac{11}{12}$ cups of flour is needed

$$22) \quad 2\frac{1}{4} \rightarrow \frac{1}{4}$$

$$+ \quad 3\frac{1}{2} \times \frac{2}{2} = 3\frac{2}{4}$$

$$\hline 5 \quad \frac{3}{4}$$

$5\frac{3}{4}$ dozen onions.

Puzzle $3\frac{3}{5} + 2\frac{2}{3} = 6\frac{4}{15}$

13a

$$1) \frac{1}{2} \times \frac{4}{5} = \frac{4}{10} \div \frac{2}{2} = \frac{2}{5} \quad 2) \frac{1}{3} \times \frac{5}{12} = \frac{5}{36} \quad 3) \frac{3}{8} \times \frac{3}{4} = \frac{9}{32}$$

$$4) \frac{5}{6} \times \frac{2}{3} = \frac{10}{18} \div \frac{2}{2} = \frac{5}{9} \quad 5) \frac{1}{4} \times \frac{2}{5} = \frac{2}{20} \div \frac{2}{2} = \frac{1}{10} \quad 6) \frac{2}{3} \times \frac{12}{1} = \frac{24}{3} = 8$$

$$7) \frac{1}{8} \times \frac{10}{1} = \frac{10}{8} \div \frac{2}{2} = \frac{5}{4} = 1\frac{1}{4} \quad 8) \frac{4}{1} \times \frac{3}{5} = \frac{12}{5} = 2\frac{2}{5} \quad 9) \frac{3}{5} \times \frac{20}{1} = \frac{60}{5} = 12$$

$$10) \frac{8}{1} \times \frac{3}{4} = \frac{24}{4} = 6 \quad 11) \frac{18}{1} \times \frac{3}{10} = \frac{64}{10} \div \frac{2}{2} = \frac{32}{5} = 6\frac{2}{5} \quad 12) \frac{4}{7} \times \frac{1}{6} = \frac{4}{42} = \frac{2}{21}$$

$$13) \frac{21}{1} \times \frac{1}{7} = \frac{21}{7} = 3 \quad 14) \frac{2}{7} \times \frac{8}{1} = \frac{16}{7} = 2\frac{2}{7} \quad 15) \frac{1}{16} \times \frac{16}{1} = \frac{16}{16} = 1$$

$$16) \frac{3}{8} \times \frac{2}{5} = \frac{6}{40} \div \frac{2}{2} = \frac{3}{20} \quad 17) \frac{4}{12} \times \frac{1}{2} = \frac{4}{24} \div \frac{4}{4} = \frac{1}{6}$$

$$18) \frac{5}{21} \times \frac{7}{1} = \frac{35}{21} \div \frac{7}{7} = \frac{5}{3} = 1\frac{2}{3}$$

$$1) \frac{7}{8} \times \frac{1}{2} = \frac{7}{16} \quad 2) \frac{1}{5} \times \frac{1}{8} = \frac{1}{40} \quad 3) \frac{5}{6} \times \frac{3}{5} = \frac{15}{30} = \frac{15}{15} = 1 \quad (14A)$$

$$4) \frac{5}{12} \times \frac{8}{1} = \frac{40}{12} = \frac{10}{3} = 3\frac{1}{3} \quad 5) \frac{16}{1} \times \frac{3}{4} = \frac{48}{4} = 12$$

$$6) \frac{1}{10} \times \frac{17}{1} = \frac{17}{10} = 1\frac{7}{10} \quad 7) \frac{2}{3} \times \frac{21}{1} = \frac{42}{3} = 14$$

$$8) \frac{6}{1} \times \frac{10}{7} = \frac{60}{7} = 8\frac{4}{7} \quad 9) \frac{2}{5} \times \frac{2}{3} = \frac{4}{15} \quad 10) \frac{3}{8} \times \frac{10}{1} = \frac{30}{8} = \frac{15}{4} = 3\frac{3}{4}$$

$$11) \frac{7}{10} \times \frac{4}{7} = \frac{28}{70} = \frac{4}{10} = \frac{2}{5} \quad 12) \frac{1}{4} \times \frac{8}{9} = \frac{8}{36} = \frac{2}{9} \quad 13) \frac{25}{1} \times \frac{2}{5} = \frac{50}{5} = 10$$

$$14) \frac{1}{3} \times \frac{3}{4} = \frac{3}{12} = \frac{1}{4} \quad 15) \frac{1}{4} \times \frac{5}{8} = \frac{5}{32} \quad 16) \frac{32}{1} \times \frac{3}{8} = \frac{96}{8} = 12$$

$$17) \frac{24}{1} \times \frac{1}{3} = \frac{24}{3} = 8 \quad 18) \frac{7}{12} \times \frac{1}{2} = \frac{7}{24} \quad 19) \frac{30}{1} \times \frac{1}{6} = \frac{30}{6} = 5$$

$$20) \frac{15}{21} \times \frac{3}{5} = \frac{45}{105} = \frac{15}{35} = \frac{3}{7} \quad 21) \frac{5}{8} \times \frac{4}{5} = \frac{20}{40} = \frac{1}{2} \quad 22) \frac{1}{4} \times \frac{15}{1} = \frac{15}{4} = 3\frac{3}{4}$$

$$23) \frac{21}{1} \times \frac{1}{2} = \frac{21}{2} = 10\frac{1}{2} \quad 24) \frac{18}{1} \times \frac{5}{6} = \frac{90}{6} = 15 \quad 25) \frac{5}{9} \times \frac{36}{1} = \frac{180}{9} = 20$$

$$26) \frac{3}{14} \times \frac{7}{9} = \frac{21}{126} = \frac{1}{6} \quad 27) \frac{20}{1} \times \frac{3}{10} = \frac{60}{10} = 6 \quad 28) \frac{7}{15} \times \frac{5}{6} = \frac{35}{90} = \frac{7}{18}$$

$$29) \frac{2}{3} \times \frac{9}{1} = \frac{18}{3} = 6 \quad 30) \frac{3}{4} \times \frac{20}{1} = \frac{60}{4} = 15 \text{ questions} \quad 31) \frac{32}{1} \times \frac{3}{4} = \frac{96}{4} = 24 \text{ pictures}$$

Puzzle: 1 → B 2 → A 3 → D 4 → C