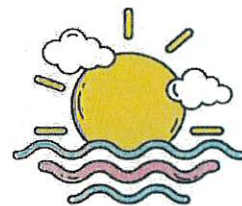


Entering 6th Grade Summer Math Maintenance



Dear Parents,

Summer is nearly here - hooray! While we look forward to a summer of rest and relaxation, we want to ensure that our students do enough math review and practice to keep their skills sharp for the fall! The purpose of this packet is to make sure you have options that will work for you and your child(ren). **Teachers will test students at the beginning of the year on the topics listed under "Required Skills."** Furthermore, although teachers will not be collecting math work from students in the fall, students are encouraged to keep up their arithmetic skills, review math concepts, and continue to explore other topics they are interested in. Intentionally incorporating math into daily activities will promote student success in the new school year. Have a wonderful summer!

Required Skills: (WILL BE TESTED IN THE FALL)

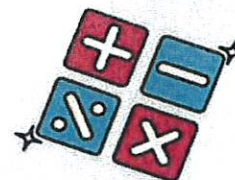
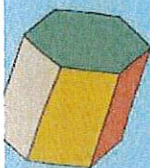
It is expected that students are proficient with 0-12 multiplication facts. Multiplication is *fundamental* to more advanced work in math. 5-10 minutes of practice per day can make a big difference. A variety of practice options are provided in this list.

Skills to review before 6th grade:

- Solid memorization of multiplication facts 0-12
- Long division
- Multi-digit multiplication
- Basic decimal operations
- Basic fraction operations
- All operations with whole numbers
- Place values in decimal numbers
- Rounding
- Comparing using inequality signs
- Area (square and rectangle)
- Perimeter

Tech Free Resources:

- Students will receive a hard copy math packet from their current math teacher with an answer key. Students are strongly encouraged to complete it.
- Math review workbooks. Some options below:
 - Spectrum Math - Grade 5 (ISBN 978-1483808734)
 - IXL The Ultimate Grade 5 Math Workbook Decimals, Fractions, & More (ISBN 978-1947569454)
 - Summer Skills - Summer Math Sharpener 5th Grade (<https://www.summerskills.com>)



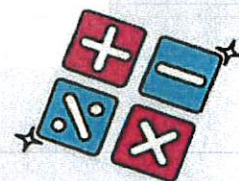
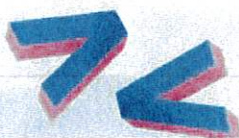
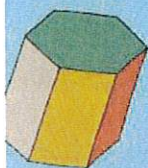


Online Resources:

- **IXL** (www.ixl.com): IXL is a website that provides a wide variety of practice problems and explanations. Families may purchase a monthly subscription (\$13-\$20 monthly). With an account the student receives targeted practice in weak areas. Exercises for students entering 6th grade can be found in the 5th grade section of the website.
- **Khan Academy** (www.khanacademy.org): free; provides step by step instructions and practice problems covering a wide variety of topics with video explanations of topics if the student is confused and needs a refresher. You can create a free account to track progress. Recommended units for review are 5th grade math units 1 through 9 and unit 12.
- **Arcademics** (www.arcademics.com/games): free (optional subscription adds data analysis); provides games covering arithmetic, ratios, time, decimals, and fractions.
- **Mathigon** (www.mathigon.org): free; interactive fun practice and exposure to mathematical concepts. Great problem solving activities and multiplication practice. The flashcards provide fluency practice with visual models.
- **Math Playground** (www.mathplayground.com): free; math games providing good fluency practice. Website was developed by a teacher
- **Puzzle Playground** (<https://www.puzzleplayground.com>): free; same developer as Math Playground but focusing on logic puzzles.
- **Primary Games - Math Flashcards** (<https://www.primarygames.com/math/flashcards>): free flashcards for fluency practice, including multiplication facts.
- **Buzz Math** (www.buzzmath.com): free 30 day trial

Apps:

- **iDevBooks: Long Division, Long Multiplication, Order of Operations, and Fraction Math**: apps for practicing arithmetic skills
- **Math Board**: Great for drilling math facts.
- **Quick Math+ - Multiplication Table and Arithmetic Game**: Good practice for math facts while trying to beat the clock.



Addition: Three or More Addends

Name _____

Date _____

Add: $3476 + 409 + 1824 = ?$

Use rounding to estimate.

3476	→	3500
409	→	400
+ 1824	→	+ 1800
		about 5700

Add.

111
3476
409
+ 1824
5709

Use rounding to estimate. Then add.

- | | | | | |
|--|--|--|--|---|
| 1. $\begin{array}{r} 96 \\ 87 \\ + 51 \end{array}$ | 2. $\begin{array}{r} 94 \\ 36 \\ + 62 \end{array}$ | 3. $\begin{array}{r} 76 \\ 25 \\ + 59 \end{array}$ | 4. $\begin{array}{r} 533 \\ 106 \\ + 999 \end{array}$ | 5. $\begin{array}{r} 695 \\ 980 \\ + 243 \end{array}$ |
| 6. $\begin{array}{r} 100 \\ 103 \\ + 798 \end{array}$ | 7. $\begin{array}{r} 676 \\ 15 \\ + 575 \end{array}$ | 8. $\begin{array}{r} 284 \\ 45 \\ + 295 \end{array}$ | 9. $\begin{array}{r} 382 \\ 300 \\ + 948 \end{array}$ | 10. $\begin{array}{r} 7852 \\ 3789 \\ + 2896 \end{array}$ |
| 11. $\begin{array}{r} 7852 \\ 6317 \\ + 6276 \end{array}$ | 12. $\begin{array}{r} 4284 \\ 979 \\ + 5610 \end{array}$ | 13. $\begin{array}{r} 6944 \\ 9137 \\ + 8348 \end{array}$ | 14. $\begin{array}{r} 102 \\ 1516 \\ + 3774 \end{array}$ | 15. $\begin{array}{r} 1881 \\ 9795 \\ + 8721 \end{array}$ |
| 16. $\begin{array}{r} \$1.40 \\ 6.07 \\ + 8.63 \end{array}$ | 17. $\begin{array}{r} \$81.44 \\ 70.90 \\ + 52.64 \end{array}$ | 18. $\begin{array}{r} \$74.53 \\ 41.40 \\ + 39.39 \end{array}$ | 19. $\begin{array}{r} \$24.38 \\ 97.90 \\ + 46.09 \end{array}$ | 20. $\begin{array}{r} \$39.02 \\ 36.49 \\ + 48.98 \end{array}$ |
| 21. $\begin{array}{r} 22 \\ 543 \\ 916 \\ + 430 \end{array}$ | 22. $\begin{array}{r} 677 \\ 502 \\ 513 \\ + 462 \end{array}$ | 23. $\begin{array}{r} 2438 \\ 9790 \\ 609 \\ + 3902 \end{array}$ | 24. $\begin{array}{r} \$35.34 \\ 40.48 \\ 26.97 \\ + 5.55 \end{array}$ | 25. $\begin{array}{r} \$21.59 \\ 97.24 \\ 10.03 \\ + 45.45 \end{array}$ |

Align and add.

- | | |
|-------------------------------|---|
| 26. $468 + 298 + 622 =$ _____ | 27. $3019 + 7747 + 140 + 7607 =$ _____ |
| 28. $67 + 263 + 279 =$ _____ | 29. $8626 + 7904 + 3735 + 9619 =$ _____ |
| 30. $695 + 980 + 243 =$ _____ | 31. $7055 + 5334 + 5795 + 2895 =$ _____ |
| 32. $829 + 24 + 589 =$ _____ | 33. $8144 + 7090 + 453 + 4140 =$ _____ |
| 34. $86 + 910 + 226 =$ _____ | 35. $8714 + 562 + 9495 + 3640 =$ _____ |

Subtraction with Zeros

Name _____

Date _____

Subtract: $8000 - 6493$

To subtract when the minuend has zeros, first use front-end digits to estimate, then regroup as many times as necessary *before* you start to subtract.

Estimate.

$$\begin{array}{r} 8000 \\ - 6000 \\ \hline 2000 \end{array}$$

Regroup and Subtract.

$$\begin{array}{r} \overset{9}{7} \overset{9}{10} \overset{10}{10} \\ \overset{0}{8} \overset{0}{0} \overset{0}{0} \\ - 6493 \\ \hline 1507 \end{array}$$

Estimate using front-end digits. Then find the difference.

1. $\begin{array}{r} 600 \\ - 253 \\ \hline \end{array}$

2. $\begin{array}{r} 800 \\ - 172 \\ \hline \end{array}$

3. $\begin{array}{r} 500 \\ - 329 \\ \hline \end{array}$

4. $\begin{array}{r} 400 \\ - 214 \\ \hline \end{array}$

5. $\begin{array}{r} 900 \\ - 678 \\ \hline \end{array}$

6. $\begin{array}{r} 200 \\ - 84 \\ \hline \end{array}$

7. $\begin{array}{r} 500 \\ - 314 \\ \hline \end{array}$

8. $\begin{array}{r} 300 \\ - 158 \\ \hline \end{array}$

9. $\begin{array}{r} \$7.00 \\ - 2.98 \\ \hline \end{array}$

10. $\begin{array}{r} \$6.00 \\ - 4.34 \\ \hline \end{array}$

11. $\begin{array}{r} 7000 \\ - 6193 \\ \hline \end{array}$

12. $\begin{array}{r} 4000 \\ - 2864 \\ \hline \end{array}$

13. $\begin{array}{r} 9000 \\ - 5877 \\ \hline \end{array}$

14. $\begin{array}{r} 5000 \\ - 1891 \\ \hline \end{array}$

15. $\begin{array}{r} 8000 \\ - 4375 \\ \hline \end{array}$

16. $\begin{array}{r} 1006 \\ - 729 \\ \hline \end{array}$

17. $\begin{array}{r} 3004 \\ - 1949 \\ \hline \end{array}$

18. $\begin{array}{r} 2001 \\ - 1863 \\ \hline \end{array}$

19. $\begin{array}{r} 6008 \\ - 3855 \\ \hline \end{array}$

20. $\begin{array}{r} 8005 \\ - 4466 \\ \hline \end{array}$

Find the missing minuend.

21. $\begin{array}{r} \boxed{} \\ - 271 \\ \hline 319 \end{array}$

22. $\begin{array}{r} \boxed{} \\ - 749 \\ \hline 466 \end{array}$

23. $\begin{array}{r} \boxed{} \\ - 3642 \\ \hline 4358 \end{array}$

24. $\begin{array}{r} \boxed{} \\ - 4195 \\ \hline 2805 \end{array}$

25. $\begin{array}{r} \boxed{} \\ - 2037 \\ \hline 5166 \end{array}$

Align and subtract.

26. $8000 - 7638 = \underline{\hspace{2cm}}$

27. $\$60.03 - \$27.95 = \underline{\hspace{2cm}}$

28. $2070 - 999 = \underline{\hspace{2cm}}$

29. $\$80.00 - \$16.27 = \underline{\hspace{2cm}}$

30. $7004 - 1928 = \underline{\hspace{2cm}}$

31. $\$50.20 - \$7.68 = \underline{\hspace{2cm}}$

Problem Solving

32. Shaya saved \$50.00. She bought a jacket that cost \$27.39. Did she have enough money left to buy a skirt for \$23.99? _____

Larger Sums and Differences

Name _____

Date _____

Add: $696,285 + 401,604 + 16,297 = ?$

Estimate by rounding.

$696,285 \longrightarrow 700,000$	$\begin{array}{r} 111\ 12 \\ 696,285 \end{array}$
$401,604 \longrightarrow 400,000$	$401,609$
$+ 16,297 \longrightarrow + 20,000$	$+ 16,297$
about 1,120,000	1,114,191

Subtract: $\$1860.13 - \$1085.01 = ?$

Estimate by rounding.

Subtract.

$\$1860.13 \longrightarrow \2000.00	$\begin{array}{r} 15 \\ 7\cancel{5}10 \\ \$1860.13 \end{array}$
$- 1085.01 \longrightarrow - 1000.00$	$- 1085.01$
about \$1000.00	\$ 775.12

Use rounding to estimate. Then add or subtract.

1. $\begin{array}{r} 95,127 \\ 54,202 \\ + 61,806 \\ \hline \end{array}$

2. $\begin{array}{r} 49,437 \\ 97,296 \\ + 34,622 \\ \hline \end{array}$

3. $\begin{array}{r} 21,779 \\ 37,899 \\ + 79,391 \\ \hline \end{array}$

4. $\begin{array}{r} 64,595 \\ 34,783 \\ + 24,518 \\ \hline \end{array}$

5. $\begin{array}{r} 39,584 \\ - 28,150 \\ \hline \end{array}$

6. $\begin{array}{r} 50,337 \\ - 13,873 \\ \hline \end{array}$

7. $\begin{array}{r} 51,725 \\ - 26,536 \\ \hline \end{array}$

8. $\begin{array}{r} 70,443 \\ - 18,540 \\ \hline \end{array}$

9. $\begin{array}{r} \$862.61 \\ + 790.48 \\ \hline \end{array}$

10. $\begin{array}{r} \$373.53 \\ + 961.95 \\ \hline \end{array}$

11. $\begin{array}{r} \$871.44 \\ + 456.23 \\ \hline \end{array}$

12. $\begin{array}{r} \$545.01 \\ + 419.70 \\ \hline \end{array}$

13. $\begin{array}{r} 42,845 \\ - 4,197 \\ \hline \end{array}$

14. $\begin{array}{r} 56,104 \\ - 38,963 \\ \hline \end{array}$

15. $\begin{array}{r} 91,371 \\ - 76,278 \\ \hline \end{array}$

16. $\begin{array}{r} 57,794 \\ - 34,063 \\ \hline \end{array}$

17. $\begin{array}{r} \$155.66 \\ - 73.85 \\ \hline \end{array}$

18. $\begin{array}{r} \$257.26 \\ - 161.75 \\ \hline \end{array}$

19. $\begin{array}{r} \$542.07 \\ - 84.72 \\ \hline \end{array}$

20. $\begin{array}{r} \$911.19 \\ - 723.67 \\ \hline \end{array}$

21. $\begin{array}{r} 70,544 \\ 53,342 \\ + 57,951 \\ \hline \end{array}$

22. $\begin{array}{r} 28,956 \\ 30,194 \\ + 77,474 \\ \hline \end{array}$

23. $\begin{array}{r} 123,082 \\ 954,157 \\ + 797,297 \\ \hline \end{array}$

24. $\begin{array}{r} \$1692.64 \\ 7127.30 \\ + 2324.96 \\ \hline \end{array}$

Align. Then add or subtract.

25. $518,015 + 757,029 =$ _____

26. $278,279 - 44,647 =$ _____

27. $784,488 + 50,262 =$ _____

28. $162,821 - 105,277 =$ _____

Multiply Two Digits

Name _____

Date _____

To multiply by two digits:

- Multiply by the ones.
- Multiply by the tens.
- Add the partial products.

$$\begin{array}{r} 23 \\ \times 13 \\ \hline 69 \\ +23 \\ \hline 299 \end{array}$$

$$\begin{array}{r} 346 \\ \times 54 \\ \hline 1384 \\ +1730 \\ \hline 18,684 \end{array}$$

$$\begin{array}{r} 4721 \\ \times 76 \\ \hline 28326 \\ +33047 \\ \hline 358,796 \end{array}$$

Use rounding to estimate. Then multiply.

1. $\begin{array}{r} 10 \\ \times 78 \\ \hline \end{array}$

2. $\begin{array}{r} 45 \\ \times 45 \\ \hline \end{array}$

3. $\begin{array}{r} 59 \\ \times 83 \\ \hline \end{array}$

4. $\begin{array}{r} 16 \\ \times 61 \\ \hline \end{array}$

5. $\begin{array}{r} 20 \\ \times 95 \\ \hline \end{array}$

6. $\begin{array}{r} 454 \\ \times 35 \\ \hline \end{array}$

7. $\begin{array}{r} 149 \\ \times 52 \\ \hline \end{array}$

8. $\begin{array}{r} 928 \\ \times 53 \\ \hline \end{array}$

9. $\begin{array}{r} 89 \\ \times 75 \\ \hline \end{array}$

10. $\begin{array}{r} 401 \\ \times 46 \\ \hline \end{array}$

11. $\begin{array}{r} 645 \\ \times 34 \\ \hline \end{array}$

12. $\begin{array}{r} 104 \\ \times 18 \\ \hline \end{array}$

13. $\begin{array}{r} 77 \\ \times 23 \\ \hline \end{array}$

14. $\begin{array}{r} 959 \\ \times 84 \\ \hline \end{array}$

15. $\begin{array}{r} 494 \\ \times 97 \\ \hline \end{array}$

16. $\begin{array}{r} 9967 \\ \times 33 \\ \hline \end{array}$

17. $\begin{array}{r} 4952 \\ \times 41 \\ \hline \end{array}$

18. $\begin{array}{r} 6952 \\ \times 17 \\ \hline \end{array}$

19. $\begin{array}{r} 4229 \\ \times 64 \\ \hline \end{array}$

20. $\begin{array}{r} 8316 \\ \times 23 \\ \hline \end{array}$

Find the product.

21. $54 \times 814 =$ _____

22. $70 \times 427 =$ _____

23. $61 \times 2277 =$ _____

24. $28 \times 4898 =$ _____

25. $80 \times 6985 =$ _____

26. $98 \times 2232 =$ _____

Problem Solving

27. Growing Gardens had 18 daylily plants. Each plant produced 875 flowers. How many flowers did the plants produce? _____

Multiply Three Digits

Name _____

Date _____

To multiply by three digits:

- Multiply by the ones.
- Multiply by the tens.
- Multiply by the hundreds.
- Add the partial products.

$$\begin{array}{r} 721 \\ \times 184 \\ \hline 2884 \\ 5768 \\ +721 \\ \hline 132,664 \end{array}$$

$$\begin{array}{r} 2753 \\ \times 239 \\ \hline 24777 \\ 8259 \\ +5506 \\ \hline 657,967 \end{array}$$

Use rounding to estimate. Then multiply.

1. $\begin{array}{r} 218 \\ \times 446 \\ \hline \end{array}$

2. $\begin{array}{r} 236 \\ \times 878 \\ \hline \end{array}$

3. $\begin{array}{r} 610 \\ \times 374 \\ \hline \end{array}$

4. $\begin{array}{r} 397 \\ \times 526 \\ \hline \end{array}$

5. $\begin{array}{r} 270 \\ \times 581 \\ \hline \end{array}$

6. $\begin{array}{r} 868 \\ \times 259 \\ \hline \end{array}$

7. $\begin{array}{r} 259 \\ \times 178 \\ \hline \end{array}$

8. $\begin{array}{r} 585 \\ \times 931 \\ \hline \end{array}$

9. $\begin{array}{r} 438 \\ \times 759 \\ \hline \end{array}$

10. $\begin{array}{r} 245 \\ \times 378 \\ \hline \end{array}$

11. $\begin{array}{r} 312 \\ \times 798 \\ \hline \end{array}$

12. $\begin{array}{r} 151 \\ \times 592 \\ \hline \end{array}$

13. $\begin{array}{r} 956 \\ \times 243 \\ \hline \end{array}$

14. $\begin{array}{r} 939 \\ \times 114 \\ \hline \end{array}$

15. $\begin{array}{r} 984 \\ \times 632 \\ \hline \end{array}$

Find the product.

16. $9795 \times 872 =$ _____

17. $5815 \times 729 =$ _____

18. $1450 \times 259 =$ _____

19. $5044 \times 183 =$ _____

Problem Solving

20. A farmer planted 249 rows of cabbages. There were 267 cabbages in each row. How many cabbages did he plant?

21. In one month, Jane picked 623 baskets of cherries. If each basket held 382 cherries, how many cherries did she pick?

Zeros in the Multiplier

Name _____

Date _____

When multiplying with zeros in the multiplier:

- You may omit the partial products of the zeros.
- Remember to align the other partial products correctly under the multiplier place.

Long Way

$$\begin{array}{r} 8241 \\ \times 607 \\ \hline 57687 \\ 0000 \\ +49446 \\ \hline 5,002,287 \end{array}$$

Short Way

$$\begin{array}{r} 8241 \\ \times 607 \\ \hline 57687 \\ +49446 \\ \hline 5,002,287 \end{array}$$

Use rounding to estimate. Then multiply.

1. $\begin{array}{r} 580 \\ \times 605 \\ \hline \end{array}$

2. $\begin{array}{r} 268 \\ \times 508 \\ \hline \end{array}$

3. $\begin{array}{r} 406 \\ \times 950 \\ \hline \end{array}$

4. $\begin{array}{r} 763 \\ \times 580 \\ \hline \end{array}$

5. $\begin{array}{r} 651 \\ \times 807 \\ \hline \end{array}$

6. $\begin{array}{r} 807 \\ \times 309 \\ \hline \end{array}$

7. $\begin{array}{r} 598 \\ \times 902 \\ \hline \end{array}$

8. $\begin{array}{r} 128 \\ \times 650 \\ \hline \end{array}$

9. $\begin{array}{r} 412 \\ \times 510 \\ \hline \end{array}$

10. $\begin{array}{r} 733 \\ \times 450 \\ \hline \end{array}$

11. $\begin{array}{r} 3326 \\ \times 450 \\ \hline \end{array}$

12. $\begin{array}{r} 5551 \\ \times 803 \\ \hline \end{array}$

13. $\begin{array}{r} 5639 \\ \times 203 \\ \hline \end{array}$

14. $\begin{array}{r} 2492 \\ \times 807 \\ \hline \end{array}$

15. $\begin{array}{r} 6181 \\ \times 306 \\ \hline \end{array}$

16. $\begin{array}{r} 3119 \\ \times 240 \\ \hline \end{array}$

17. $\begin{array}{r} 8225 \\ \times 209 \\ \hline \end{array}$

18. $\begin{array}{r} 5899 \\ \times 602 \\ \hline \end{array}$

19. $\begin{array}{r} 4216 \\ \times 504 \\ \hline \end{array}$

20. $\begin{array}{r} 26311 \\ \times 390 \\ \hline \end{array}$

Find the product.

21. $200 \times 785 =$ _____

22. $300 \times 254 =$ _____

23. $602 \times 3476 =$ _____

24. $940 \times 1769 =$ _____

25. $510 \times 7776 =$ _____

26. $707 \times 9753 =$ _____

Problem Solving

27. A stadium has 200 rows of 225 seats.
How many seats are in the stadium? _____

Three-Digit Quotients

Name _____

Date _____

Division Steps

- Decide where to begin the quotient.
- Estimate.
- Divide.
- Multiply.
- Subtract and compare.
- Bring down.
- Repeat the steps as necessary.
- Check.

Divide: $497 \div 3$

$$\begin{array}{r} 165 \text{ R}2 \\ 3 \overline{)497} \\ \underline{-3} \\ 19 \\ \underline{-18} \\ 17 \\ \underline{-15} \\ 2 \end{array}$$

Check.

$$\begin{array}{r} 165 \\ \times 3 \\ \hline 495 \\ + 2 \\ \hline 497 \end{array}$$

Divide and check.

1. $7 \overline{)782}$

2. $5 \overline{)850}$

3. $6 \overline{)672}$

4. $8 \overline{)981}$

5. $4 \overline{)3816}$

6. $7 \overline{)6958}$

7. $3 \overline{)1814}$

8. $5 \overline{)3927}$

9. $908 \div 2 = \underline{\hspace{2cm}}$

10. $856 \div 5 = \underline{\hspace{2cm}}$

11. $313 \div 9 = \underline{\hspace{2cm}}$

12. $4893 \div 3 = \underline{\hspace{2cm}}$

13. $920 \div 7 = \underline{\hspace{2cm}}$

14. $782 \div 6 = \underline{\hspace{2cm}}$

Problem Solving

15. There are 975 cans at a factory.
How many 6-packs can be made?
How many cans will be left over?

16. Three friends equally share a bag of 813 pennies. How many pennies does each friend get?

Larger Quotients

Name _____

Date _____

Divide: $93,857 \div 4$

Repeat the division steps until the division is completed.

$$\begin{array}{r}
 23\ 464\ R1 \\
 4 \overline{)93,857} \\
 \underline{-8} \\
 13 \\
 \underline{-12} \\
 18 \\
 \underline{-16} \\
 25 \\
 \underline{-24} \\
 17 \\
 \underline{-16} \\
 1
 \end{array}$$

Check.

$$\begin{array}{r}
 23,464 \\
 \times \quad 4 \\
 \hline
 93,856 \\
 + \quad 1 \\
 \hline
 93,857
 \end{array}$$

Divide and check.

1. $3 \overline{)78,260}$

2. $5 \overline{)85,794}$

3. $6 \overline{)96,726}$

4. $8 \overline{)98,744}$

5. $6 \overline{)43,487}$

6. $2 \overline{)31,543}$

7. $4 \overline{)28,529}$

8. $9 \overline{)61,134}$

9. $5 \overline{)141,585}$

10. $7 \overline{)232,486}$

11. $8 \overline{)522,872}$

12. $9 \overline{)515,056}$

Problem Solving

13. Plants Plus has 21,073 tulip bulbs. If 5 bulbs are planted in each pot, how many pots are needed? How many bulbs are left over?
- _____

14. An automobile factory made 8500 cars. The same number of cars were sent to 4 cities. How many cars were sent to each city?
- _____

Zeros in the Quotient

Name _____

Date _____

$$5015 \div 5 = \underline{\quad ? \quad}$$

Not enough hundreds or tens. Write 0s in the quotient.

$$\begin{array}{r} 3 \\ 5 \overline{)5015} \\ \underline{-5} \\ 00 \\ \underline{-0} \\ 01 \\ \underline{-0} \\ 15 \\ \underline{-15} \\ 0 \end{array}$$

Check.

$$\begin{array}{r} 1003 \\ \times 5 \\ \hline 5015 \end{array}$$

Divide and check.

1. $7 \overline{)742}$

2. $6 \overline{)612}$

3. $6 \overline{)3047}$

4. $8 \overline{)8720}$

5. $8 \overline{)3254}$

6. $7 \overline{)5643}$

7. $6 \overline{)3664}$

8. $9 \overline{)8910}$

9. $5 \overline{)25,456}$

10. $7 \overline{)56,756}$

11. $4 \overline{)28,377}$

12. $8 \overline{)73,674}$

Problem Solving

13. A farm has 2525 hens separated equally in 5 henhouses. How many hens are in each henhouse?

14. An apple grower packs 816 select apples equally into 8 cases for shipment. How many apples will be in each case?

Teens as Divisors

Name _____

Date _____

$$12,416 \div 17 = ?$$

Divide the hundreds.

$$\begin{array}{r} \times 8 \\ 17 \overline{) 12,416} \\ \underline{136} \end{array}$$

Too large. Try 7.

$$\begin{array}{r} 7 \\ 17 \overline{) 12,416} \\ \underline{-119} \\ 5 \end{array}$$

Divide the tens.

$$\begin{array}{r} 73 \\ 17 \overline{) 12,416} \\ \underline{-119} \\ 51 \\ \underline{-51} \\ 0 \end{array}$$

Divide the ones.

$$\begin{array}{r} 730 \text{ R}6 \\ 17 \overline{) 12,416} \\ \underline{-119} \\ 51 \\ \underline{-51} \\ 06 \\ \underline{-0} \\ 6 \end{array}$$

Check.

$$\begin{array}{r} 730 \\ \times 17 \\ \hline 5110 \\ 730 \\ \hline 12,410 \\ + 6 \\ \hline 12,416 \end{array}$$

Find the quotient and the remainder. Then check.

1. $11 \overline{) 321}$

2. $13 \overline{) 435}$

3. $15 \overline{) 582}$

4. $17 \overline{) 6294}$

5. $19 \overline{) 7943}$

6. $12 \overline{) 8376}$

7. $14 \overline{) 92,462}$

8. $16 \overline{) 28,619}$

9. $18 \overline{) 47,829}$

10. $11 \overline{) 58,294}$

11. $15 \overline{) 183,247}$

12. $19 \overline{) 175,492}$

Problem Solving

13. A bank received 116,714 key chains to give to customers. Each of the 14 tellers received the same number of key chains. At most, how many did each teller receive? How many chains were left over?

Two-Digit Divisors

Name _____

Date _____

Divide: $2239 \div 43$

Divide the tens.

$$\begin{array}{r} \times 6 \\ 43 \overline{) 2239} \\ \underline{258} \end{array}$$

$$\begin{array}{r} \rightarrow 5 \\ 43 \overline{) 2239} \\ \underline{-215} \\ 8 \end{array}$$

Too large. Try 5.

Divide the ones.

$$\begin{array}{r} 52 \text{ R}3 \\ 43 \overline{) 2239} \\ \underline{-215} \downarrow \\ 89 \\ \underline{-86} \\ 3 \end{array}$$

Check.

$$\begin{array}{r} 52 \\ \times 43 \\ \hline 156 \\ 208 \\ \hline 2236 \\ + 3 \\ \hline 2239 \end{array}$$

Divide and check.

1. $31 \overline{) 69}$

2. $82 \overline{) 167}$

3. $46 \overline{) 184}$

4. $17 \overline{) 360}$

5. $73 \overline{) 4526}$

6. $75 \overline{) 3718}$

7. $54 \overline{) 2870}$

8. $91 \overline{) 6643}$

9. $27 \overline{) 5807}$

10. $22 \overline{) 4500}$

11. $38 \overline{) 4294}$

12. $64 \overline{) 3399}$

Problem Solving

13. A bird called the purple martin can eat 2400 mosquitos in 40 minutes. At that rate, how many can it eat per minute?

14. At a picnic, 52 people ate 416 shrimp. Each person ate the same number of shrimp. How many shrimp did each person eat?

15. Rachel took 188 pictures on her vacation. If each section of her photo album holds 24 pictures, how many sections could she fill?

Divide Larger Numbers

Name _____

Date _____

Divide: $109,345 \div 23$

Repeat the division steps until the division is completed.

$$\begin{array}{r} \times 4 \\ 23 \overline{) 109,345} \\ \underline{- 92} \\ 17 \end{array}$$

Divide.

$$\begin{array}{r} 4754 \text{ R3} \\ 23 \overline{) 109,345} \\ \underline{- 92} \\ 173 \\ \underline{- 161} \\ 124 \\ \underline{- 115} \\ 95 \\ \underline{- 92} \\ 3 \end{array}$$

Check.

$$\begin{array}{r} 4754 \\ \times 23 \\ \hline 14262 \\ 9508 \\ \hline 109,342 \\ + 3 \\ \hline 109,345 \end{array}$$

Divide and check.

1. $14 \overline{) 54,692}$

2. $18 \overline{) 51,704}$

3. $19 \overline{) 17,784}$

4. $21 \overline{) 13,798}$

5. $36 \overline{) 33,120}$

6. $47 \overline{) 40,908}$

7. $42 \overline{) 10,083}$

8. $56 \overline{) 134,417}$

9. $93 \overline{) 985,826}$

10. $33 \overline{) 178,829}$

11. $81 \overline{) 31,579}$

Order of Operations

Name _____

Date _____

Compute: $(80 \div 2) - 2 \times (3 \times 5)$

- Do the operations within parentheses first.
- Multiply or divide from left to right.
- Add or subtract from left to right.

$$\begin{array}{rcl}
 (80 \div 2) - 2 \times (3 \times 5) & & \\
 \downarrow & & \downarrow \\
 40 - 2 \times 15 & & \\
 & & \downarrow \\
 40 - 30 & & \\
 40 - 30 = 10 & &
 \end{array}$$

Use the order of operations to compute.

1. $5 - 8 \div 2 + 7$ _____

2. $20 \div 4 + 3 \times 6$ _____

3. $(8 \times 7) + (56 \div 8)$ _____

4. $(42 - 12) \div (7 + 3)$ _____

5. $30 + 18 \div 3 - 12$ _____

6. $24 - 9 \div 3 \times 5$ _____

7. $2 + 6 \times 10 \div 30 + 7$ _____

8. $19 + 63 \div 9 \times 3 - 13$ _____

9. $59 - 35 \div 7 \times 4 + 53$ _____

10. $50 - 12 \div 3 \times 2$ _____

11. $20 \div 4 - 4 + (81 \div 9)$ _____

12. $25 - 6 \times 4 + (23 - 3) - 4$ _____

13. $(42 - 6) + 5 - 3 + (8 \times 3)$ _____

14. $3 + (37 - 1) \div 9 + (18 + 3)$ _____

15. $(5 \times 9) \div 5 + (8 \div 8)$ _____

16. $(64 \div 8) - 5 + (33 \times 3)$ _____

17. $(35 - 10) \div (4 + 1)$ _____

18. $20 + 6 \div (4 - 2)$ _____

19. $(6 \times 9) + (63 \div 7)$ _____

20. $32 \div 8 + 4 + (6 \times 0)$ _____

21. $(42 + 10) \div (4 \div 2)$ _____

22. $(55 - 15) \div (5 \times 2)$ _____

23. $(8 \times 8) + (9 \times 1)$ _____

24. $35 \div 7 + 5 - (7 \times 1)$ _____

Fractions in Lowest Terms

Name _____

Date _____

Write as a fraction in lowest terms: $\frac{16}{18}$

Divide the numerator and the denominator by their GCF.

Factors of 16: 1, 2, 4, 8, 16

Factors of 18: 1, 2, 3, 6, 9, 18

Common Factors: 1, 2

Greatest Common Factor: 2

$\frac{16 \div 2}{18 \div 2} = \frac{8}{9}$ ← lowest terms or simplest terms

Is each fraction in lowest terms? Write Yes or No

- | | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 1. $\frac{2}{10}$ _____ | 2. $\frac{8}{12}$ _____ | 3. $\frac{3}{10}$ _____ | 4. $\frac{7}{35}$ _____ | 5. $\frac{11}{33}$ _____ |
| 6. $\frac{5}{8}$ _____ | 7. $\frac{4}{18}$ _____ | 8. $\frac{6}{25}$ _____ | 9. $\frac{4}{9}$ _____ | 10. $\frac{6}{12}$ _____ |
| 11. $\frac{14}{26}$ _____ | 12. $\frac{18}{45}$ _____ | 13. $\frac{32}{44}$ _____ | 14. $\frac{18}{63}$ _____ | 15. $\frac{15}{23}$ _____ |

Name the GCF of the numerator and the denominator.

- | | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 16. $\frac{3}{9}$ _____ | 17. $\frac{6}{12}$ _____ | 18. $\frac{14}{24}$ _____ | 19. $\frac{10}{15}$ _____ | 20. $\frac{24}{36}$ _____ |
| 21. $\frac{18}{45}$ _____ | 22. $\frac{19}{38}$ _____ | 23. $\frac{2}{16}$ _____ | 24. $\frac{7}{49}$ _____ | 25. $\frac{36}{42}$ _____ |

Write each fraction in simplest form.

- | | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 26. $\frac{10}{25}$ _____ | 27. $\frac{8}{12}$ _____ | 28. $\frac{6}{16}$ _____ | 29. $\frac{9}{36}$ _____ | 30. $\frac{30}{50}$ _____ |
| 31. $\frac{14}{35}$ _____ | 32. $\frac{12}{16}$ _____ | 33. $\frac{2}{6}$ _____ | 34. $\frac{16}{18}$ _____ | 35. $\frac{2}{10}$ _____ |
| 36. $\frac{8}{40}$ _____ | 37. $\frac{3}{9}$ _____ | 38. $\frac{20}{60}$ _____ | 39. $\frac{6}{22}$ _____ | 40. $\frac{20}{24}$ _____ |
| 41. $\frac{9}{15}$ _____ | 42. $\frac{15}{20}$ _____ | 43. $\frac{10}{12}$ _____ | 44. $\frac{24}{32}$ _____ | 45. $\frac{21}{35}$ _____ |
| 46. $\frac{18}{36}$ _____ | 47. $\frac{27}{45}$ _____ | 48. $\frac{10}{25}$ _____ | 49. $\frac{54}{63}$ _____ | 50. $\frac{6}{30}$ _____ |

Problem Solving Write each answer in lowest terms.

51. There are 6 boys and 8 girls in a singing group.
What fractional part of the group is girls? _____
52. Four of 12 people chose milk. What fractional part of the group chose other drinks? _____
53. Jake had 15 sports cards. Five of the cards show baseball players. What fractional part of the cards show baseball players? _____

Compare and Order Fractions

Name _____

Date _____

Compare: $\frac{2}{5}$? $\frac{1}{3}$

LCD: 15

$$\frac{2 \times 3}{5 \times 3} = \frac{6}{15} \quad \frac{1 \times 5}{3 \times 5} = \frac{5}{15}$$

$$6 > 5 \rightarrow \frac{6}{15} > \frac{5}{15}$$

$$\text{So } \frac{2}{5} > \frac{1}{3}$$

Order from least to greatest: $\frac{4}{5}, \frac{1}{4}, \frac{3}{10}$

LCD: 20

$$\frac{4}{5} = \frac{16}{20}; \quad \frac{1}{4} = \frac{5}{20}; \quad \frac{3}{10} = \frac{6}{20}$$

$$5 < 6 < 16 \rightarrow \frac{5}{20} < \frac{6}{20} < \frac{16}{20}$$

Least to greatest: $\frac{1}{4}, \frac{3}{10}, \frac{4}{5}$

Compare. Write $<$, $=$, or $>$.

1. $\frac{3}{10}$ _____ $\frac{5}{20}$

2. $\frac{4}{32}$ _____ $\frac{7}{35}$

3. $\frac{7}{12}$ _____ $\frac{7}{24}$

4. $\frac{1}{9}$ _____ $\frac{1}{8}$

5. $\frac{2}{6}$ _____ $\frac{3}{8}$

6. $\frac{4}{7}$ _____ $\frac{2}{3}$

7. $\frac{5}{10}$ _____ $\frac{1}{2}$

8. $\frac{6}{8}$ _____ $\frac{3}{4}$

9. $\frac{3}{8}$ _____ $\frac{2}{5}$

10. $\frac{7}{10}$ _____ $\frac{2}{3}$

11. $\frac{2}{3}$ _____ $\frac{1}{4}$

12. $\frac{8}{20}$ _____ $\frac{2}{5}$

13. $\frac{6}{6}$ _____ $\frac{40}{40}$

14. $\frac{12}{8}$ _____ $1\frac{2}{3}$

15. $\frac{23}{21}$ _____ $\frac{7}{7}$

16. $\frac{29}{8}$ _____ $3\frac{3}{4}$

17. $\frac{15}{12}$ _____ $\frac{20}{16}$

18. $2\frac{1}{5}$ _____ $2\frac{3}{10}$

19. $4\frac{3}{8}$ _____ 4

20. 2 _____ $\frac{12}{7}$

Write in order from least to greatest.

21. $\frac{3}{8}, \frac{1}{7}, \frac{1}{2}$ _____

22. $\frac{2}{3}, \frac{1}{3}, \frac{7}{10}$ _____

23. $3\frac{5}{8}, 3\frac{1}{2}, 3\frac{3}{8}$ _____

24. $12\frac{1}{8}, 12\frac{3}{10}, 12\frac{1}{4}$ _____

25. $\frac{2}{3}, \frac{3}{4}, \frac{1}{6}$ _____

26. $2\frac{7}{8}, 2\frac{1}{2}, 2\frac{1}{3}$ _____

Write in order from greatest to least.

27. $\frac{1}{3}, \frac{1}{5}, \frac{4}{15}$ _____

28. $\frac{1}{8}, \frac{9}{16}, \frac{1}{4}$ _____

29. $\frac{1}{12}, \frac{3}{4}, \frac{3}{12}$ _____

30. $\frac{7}{4}, 1\frac{1}{3}, 1\frac{4}{9}$ _____

31. $\frac{1}{4}, \frac{1}{5}, \frac{3}{10}$ _____

32. $5\frac{5}{6}, 5\frac{3}{4}, 5\frac{11}{12}$ _____

Problem Solving

33. Adele and Morris took turns driving their car across the country. Adele drove $\frac{2}{3}$ of the way, and Morris drove $\frac{4}{12}$ of the way. Who drove less? _____

Fraction Sums

Name _____

Date _____

$$\frac{4}{9} + \frac{2}{9} = \frac{4+2}{9}$$

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

simplest form

Rename with like denominators. Then add.

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

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

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

Think: LCD is 24.

simplest form

Add. Write each sum in simplest form.

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

2. $\frac{3}{10} + \frac{1}{10}$

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

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

5. $\frac{11}{20} + \frac{3}{20}$

6. $\frac{2}{3} + \frac{2}{15}$

7. $\frac{2}{3} + \frac{1}{7}$

8. $\frac{4}{9} + \frac{3}{6}$

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

10. $\frac{3}{10} + \frac{1}{2}$

11. $\frac{3}{4} + \frac{5}{12}$

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

13. $\frac{5}{7} + \frac{3}{4}$

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

15. $\frac{8}{15} + \frac{5}{6}$

16. $\frac{5}{18} + \frac{4}{18} =$ _____

17. $\frac{3}{7} + \frac{5}{7} =$ _____

18. $\frac{1}{10} + \frac{7}{10} =$ _____

19. $\frac{1}{6} + \frac{1}{4} =$ _____

20. $\frac{1}{4} + \frac{5}{8} =$ _____

21. $\frac{2}{3} + \frac{1}{18} =$ _____

22. $\frac{4}{9} + \frac{2}{5} =$ _____

23. $\frac{3}{8} + \frac{2}{7} =$ _____

24. $\frac{3}{4} + \frac{1}{8} =$ _____

Problem Solving

25. Helena walks $\frac{5}{8}$ mi to her friend's house and then $\frac{1}{4}$ mi to school. How far does she walk? _____

26. What is the sum of three fourths and seven fourths? _____

Add Three Fractions

Name _____

Date _____

Add: $\frac{2}{3} + \frac{5}{6} + \frac{4}{9} = n$

Rename the fractions with like denominators.

Think: LCD is 18.

Then add.

$$\frac{2}{3} = \frac{2 \times 6}{3 \times 6} = \frac{12}{18}$$

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

$$+ \frac{4}{9} = \frac{4 \times 2}{9 \times 2} = \frac{8}{18}$$

$$\frac{35}{18} \longrightarrow n = 1\frac{17}{18}$$

Add. Write each sum in simplest form.

1.
$$\begin{array}{r} \frac{1}{7} \\ \frac{3}{7} \\ + \frac{1}{7} \\ \hline \end{array}$$

2.
$$\begin{array}{r} \frac{2}{11} \\ \frac{4}{11} \\ + \frac{3}{11} \\ \hline \end{array}$$

3.
$$\begin{array}{r} \frac{6}{14} \\ \frac{4}{14} \\ + \frac{4}{14} \\ \hline \end{array}$$

4.
$$\begin{array}{r} \frac{2}{15} \\ \frac{3}{15} \\ + \frac{12}{15} \\ \hline \end{array}$$

5.
$$\begin{array}{r} \frac{5}{17} \\ \frac{4}{17} \\ + \frac{7}{17} \\ \hline \end{array}$$

6.
$$\begin{array}{r} \frac{3}{12} \\ \frac{2}{3} \\ + \frac{1}{4} \\ \hline \end{array}$$

7.
$$\begin{array}{r} \frac{1}{2} \\ \frac{1}{10} \\ + \frac{1}{5} \\ \hline \end{array}$$

8.
$$\begin{array}{r} \frac{2}{9} \\ \frac{1}{6} \\ + \frac{4}{18} \\ \hline \end{array}$$

9.
$$\begin{array}{r} \frac{1}{3} \\ \frac{3}{7} \\ + \frac{4}{21} \\ \hline \end{array}$$

10.
$$\begin{array}{r} \frac{1}{4} \\ \frac{3}{16} \\ + \frac{2}{8} \\ \hline \end{array}$$

11. $\frac{3}{10} + \frac{1}{5} + \frac{4}{15} =$ _____

12. $\frac{3}{4} + \frac{7}{12} + \frac{1}{6} =$ _____

13. $\frac{2}{9} + \frac{3}{9} + \frac{1}{3} =$ _____

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

15. $\frac{1}{5} + \frac{1}{4} + \frac{7}{10} =$ _____

16. $\frac{7}{18} + \frac{1}{3} + \frac{5}{6} =$ _____

Find the value of n . Then check by adding.

17. $\left(\frac{5}{8} + \frac{1}{8}\right) + \frac{3}{8} = \frac{5}{8} + \left(\frac{1}{8} + n\right)$
 $n =$ _____

18. $\left(\frac{2}{3} + n\right) + \frac{3}{4} = \left(\frac{3}{4} + \frac{1}{2}\right) + \frac{2}{3}$
 $n =$ _____

Problem Solving

19. A family used $\frac{5}{8}$, $\frac{3}{4}$, and $\frac{1}{2}$ gallons of water on 3 different days. How many gallons of water did the family use in all?

Add Mixed Numbers

Name _____

Date _____

Find the LCD.
Add the fractions.

→ Add the whole numbers.

→ Write the sum
in simplest form.

$$\begin{array}{r} 3\frac{1}{5} = 3\frac{2}{10} \\ + 5\frac{3}{10} = + 5\frac{3}{10} \\ \hline 8\frac{5}{10} \end{array}$$

$$\begin{array}{r} 3\frac{1}{5} \\ + 5\frac{3}{10} \\ \hline 8\frac{5}{10} \end{array}$$

$$\begin{array}{r} 3\frac{1}{5} \\ + 5\frac{3}{10} \\ \hline 8\frac{5}{10} = 8\frac{1}{2} \end{array}$$

Add. Write each sum in simplest form.

1. $\begin{array}{r} 2\frac{2}{5} \\ + 7\frac{1}{5} \\ \hline \end{array}$

2. $\begin{array}{r} 5\frac{2}{15} \\ + 7\frac{1}{5} \\ \hline \end{array}$

3. $\begin{array}{r} 3\frac{2}{9} \\ + 4\frac{4}{9} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{1}{3} \\ + 2\frac{1}{6} \\ \hline \end{array}$

5. $\begin{array}{r} 14\frac{7}{9} \\ + 9\frac{1}{18} \\ \hline \end{array}$

6. $\begin{array}{r} 4\frac{8}{12} \\ + 2\frac{3}{4} \\ \hline \end{array}$

7. $\begin{array}{r} 1\frac{1}{4} \\ 3\frac{1}{4} \\ + 2\frac{3}{4} \\ \hline \end{array}$

8. $\begin{array}{r} 4\frac{2}{12} \\ 3\frac{1}{12} \\ + 1\frac{7}{12} \\ \hline \end{array}$

9. $\begin{array}{r} 5\frac{1}{3} \\ 3\frac{1}{12} \\ + 4\frac{1}{6} \\ \hline \end{array}$

10. $\begin{array}{r} 7\frac{1}{6} \\ \frac{1}{3} \\ + 2\frac{1}{2} \\ \hline \end{array}$

11. $\begin{array}{r} 8\frac{1}{3} \\ 5\frac{1}{12} \\ + 3\frac{3}{4} \\ \hline \end{array}$

12. $\begin{array}{r} 9\frac{1}{7} \\ 1\frac{2}{21} \\ + \frac{2}{3} \\ \hline \end{array}$

3. $7\frac{3}{5} + 5\frac{2}{15} =$ _____

14. $9\frac{2}{5} + 2\frac{7}{20} =$ _____

15. $4\frac{1}{3} + 1\frac{2}{9} + 1\frac{5}{18} =$ _____

6. $6\frac{1}{5} + 5\frac{4}{6} =$ _____

17. $\frac{1}{5} + 3\frac{2}{10} =$ _____

18. $4\frac{2}{5} + 2\frac{1}{4} + 3\frac{1}{20} =$ _____

9. $3\frac{3}{4} + 8\frac{1}{16} =$ _____

20. $5\frac{1}{4} + 7\frac{3}{8} =$ _____

21. $7\frac{2}{15} + 3\frac{3}{10} + 1\frac{1}{5} =$ _____

Problem Solving

22. Amiel weighs $12\frac{1}{2}$ pounds and Marthe weighs $21\frac{1}{4}$ pounds. What is the total weight of both babies?

23. Nan bought $6\frac{1}{8}$ pounds of fish. Hank bought $3\frac{1}{2}$ pounds of fish. How much fish did the two buy altogether?

24. Ms. Johnson bought $2\frac{3}{8}$ yd of fabric to make a dress and $1\frac{1}{3}$ yd of fabric to make a shirt. How much fabric did she buy?

Rename Mixed- Number Sums

Name _____

Date _____

$$8\frac{2}{3} + 4\frac{7}{9} = n$$

$$8\frac{2}{3} = 8\frac{6}{9}$$

$$+ 4\frac{7}{9} = + 4\frac{7}{9}$$

$$12\frac{13}{9} = 12 + 1\frac{4}{9} = 13\frac{4}{9}$$

$$\begin{array}{c} \uparrow \uparrow \uparrow \uparrow \\ n = 13\frac{4}{9} \end{array}$$

$$1\frac{5}{12} + 2\frac{1}{4} + 1\frac{1}{3} = n$$

$$1\frac{5}{12} = 1\frac{5}{12}$$

$$2\frac{1}{4} = 2\frac{3}{12}$$

$$+ 1\frac{1}{3} = + 1\frac{4}{12}$$

$$4\frac{12}{12} = 4 + 1 = 5$$

$$\begin{array}{c} \uparrow \uparrow \uparrow \uparrow \\ n = 5 \end{array}$$

Rename each as a whole number or a mixed number in simplest form.

1. $\frac{5}{3}$ _____

2. $6\frac{2}{2}$ _____

3. $5\frac{6}{4}$ _____

4. $6\frac{7}{4}$ _____

5. $8\frac{12}{10}$ _____

6. $7\frac{18}{14}$ _____

7. $2\frac{16}{15}$ _____

8. $5\frac{15}{11}$ _____

9. $7\frac{20}{15}$ _____

10. $42\frac{20}{20}$ _____

Add.

11.
$$\begin{array}{r} 8\frac{2}{3} \\ + 3\frac{2}{3} \\ \hline \end{array}$$

12.
$$\begin{array}{r} 6\frac{4}{5} \\ + 2\frac{3}{5} \\ \hline \end{array}$$

13.
$$\begin{array}{r} 4\frac{5}{8} \\ + 7\frac{3}{8} \\ \hline \end{array}$$

14.
$$\begin{array}{r} 4\frac{7}{24} \\ + 7\frac{5}{6} \\ \hline \end{array}$$

15.
$$\begin{array}{r} 9\frac{3}{4} \\ + 5\frac{1}{4} \\ \hline \end{array}$$

16.
$$\begin{array}{r} 3\frac{3}{5} \\ + 3\frac{5}{12} \\ \hline \end{array}$$

17.
$$\begin{array}{r} 2\frac{2}{15} \\ + 3\frac{3}{15} \\ \hline \end{array}$$

18.
$$\begin{array}{r} 1\frac{4}{7} \\ + 5\frac{1}{2} \\ \hline \end{array}$$

19.
$$\begin{array}{r} 13\frac{11}{12} \\ + 4\frac{5}{6} \\ \hline \end{array}$$

20.
$$\begin{array}{r} 12\frac{7}{18} \\ + 3\frac{7}{9} \\ \hline \end{array}$$

21.
$$\begin{array}{r} 2\frac{5}{8} \\ 4\frac{1}{2} \\ + 3\frac{3}{16} \\ \hline \end{array}$$

22.
$$\begin{array}{r} 4\frac{1}{3} \\ 6\frac{5}{12} \\ + 1\frac{1}{4} \\ \hline \end{array}$$

23.
$$\begin{array}{r} 3\frac{3}{20} \\ 4\frac{1}{5} \\ + 3\frac{3}{4} \\ \hline \end{array}$$

24.
$$\begin{array}{r} 5\frac{2}{7} \\ 2\frac{4}{14} \\ + \frac{5}{7} \\ \hline \end{array}$$

25.
$$\begin{array}{r} 1\frac{5}{15} \\ 8\frac{1}{10} \\ + 6\frac{5}{6} \\ \hline \end{array}$$

26. $1\frac{3}{8} + 6\frac{2}{3} + 4\frac{7}{24} =$ _____

27. $3\frac{2}{5} + 2\frac{7}{15} + 5\frac{3}{10} =$ _____

Problem Solving

28. Charlene mixed $2\frac{5}{8}$ gal of lemonade with $3\frac{3}{4}$ gal of seltzer to make punch. How much punch did she make? _____

Fraction Differences

Name _____

Date _____

$$\frac{9}{4} - \frac{3}{4} = \frac{9-3}{4} = \frac{6}{4} = 1\frac{1}{2}$$

simplest form

Rename the fractions with like denominators.
Then subtract.

$$\frac{7}{10} = \frac{7}{10}$$

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

$$\frac{7}{10} - \frac{2}{10} = \frac{5}{10} = \frac{1}{2}$$

Think: LCD is 10.

simplest form

Subtract. Write the difference in simplest form.

1. $\frac{7}{12} - \frac{1}{12}$

2. $\frac{19}{13} - \frac{5}{13}$

3. $\frac{23}{11} - \frac{10}{11}$

4. $\frac{4}{9} - \frac{4}{9}$

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

6. $\frac{9}{10} - \frac{4}{5}$

7. $\frac{7}{10} - \frac{2}{5}$

8. $\frac{8}{9} - \frac{1}{3}$

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

10. $\frac{7}{9} - \frac{2}{3}$

11. $\frac{11}{12} - \frac{5}{6}$

12. $\frac{5}{6} - \frac{1}{3}$

13. $\frac{7}{16} - \frac{1}{4}$

14. $\frac{8}{15} - \frac{1}{3}$

15. $\frac{9}{10} - \frac{1}{2}$

16. $\frac{31}{25} - \frac{17}{25} =$ _____

17. $\frac{15}{7} - \frac{2}{7} =$ _____

18. $\frac{10}{16} - \frac{3}{8} =$ _____

19. $\frac{5}{8} - \frac{3}{40} =$ _____

Problem Solving

20. Josefina spent $\frac{1}{4}$ hour exercising and another $\frac{3}{20}$ hour shooting baskets. How much more time did she spend exercising?

21. Gareth ate $\frac{3}{8}$ c of soup. Dan ate $\frac{1}{4}$ c of soup. Who ate more soup? How much more?

Subtract Mixed Numbers

Name _____

Date _____

$$\begin{array}{r} 9\frac{5}{8} \\ - 2\frac{1}{8} \\ \hline \end{array}$$

Remember: Subtract fractions, then subtract whole numbers.

$$\begin{array}{r} 8\frac{5}{6} = 8\frac{20}{24} \\ - 2\frac{2}{8} = -2\frac{6}{24} \\ \hline \end{array}$$

Think: LCD is 24.

$$7\frac{4}{8} = 7\frac{1}{2}$$

simplest form

$$6\frac{14}{24} = 6\frac{7}{12}$$

simplest form

Subtract.

1. $\begin{array}{r} 4\frac{7}{9} \\ - 4\frac{4}{9} \\ \hline \end{array}$

2. $\begin{array}{r} 6\frac{8}{9} \\ - 2\frac{2}{9} \\ \hline \end{array}$

3. $\begin{array}{r} 7\frac{11}{12} \\ - 5\frac{3}{12} \\ \hline \end{array}$

4. $\begin{array}{r} 4\frac{7}{8} \\ - 3\frac{5}{8} \\ \hline \end{array}$

5. $\begin{array}{r} 9\frac{7}{20} \\ - 4\frac{1}{20} \\ \hline \end{array}$

6. $\begin{array}{r} 3\frac{13}{15} \\ - 3\frac{5}{6} \\ \hline \end{array}$

7. $\begin{array}{r} 7\frac{8}{9} \\ - 5\frac{3}{4} \\ \hline \end{array}$

8. $\begin{array}{r} 5\frac{9}{10} \\ - 2\frac{3}{4} \\ \hline \end{array}$

9. $\begin{array}{r} 8\frac{4}{7} \\ - 8\frac{1}{3} \\ \hline \end{array}$

10. $\begin{array}{r} 7\frac{5}{6} \\ - 4\frac{2}{5} \\ \hline \end{array}$

11. $\begin{array}{r} 8\frac{7}{8} \\ - 3\frac{2}{7} \\ \hline \end{array}$

12. $\begin{array}{r} 7\frac{4}{5} \\ - 2\frac{1}{2} \\ \hline \end{array}$

13. $\begin{array}{r} 5\frac{6}{12} \\ - 1\frac{3}{7} \\ \hline \end{array}$

14. $\begin{array}{r} 2\frac{9}{10} \\ - 2\frac{1}{5} \\ \hline \end{array}$

15. $\begin{array}{r} 4\frac{4}{15} \\ - 3\frac{3}{30} \\ \hline \end{array}$

Circle the letter of the correct answer.

16. $6\frac{7}{8} - 2\frac{7}{8}$

a. $4\frac{7}{8}$

b. 8

c. 4

d. 5

17. $8\frac{2}{3} - 1\frac{1}{15}$

a. $7\frac{8}{15}$

b. $7\frac{4}{5}$

c. $7\frac{1}{12}$

d. $7\frac{3}{5}$

18. $5\frac{2}{5} - 2\frac{1}{8}$

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

b. $3\frac{1}{40}$

c. $3\frac{11}{40}$

d. $3\frac{1}{4}$

19. $5\frac{4}{7} - 4\frac{4}{7}$

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

b. $2\frac{1}{7}$

c. $1\frac{2}{7}$

d. 1

Problem Solving

20. Clarissa bought $2\frac{2}{3}$ yd of wrapping paper. After wrapping a gift, she had $1\frac{1}{6}$ yd left. How much did she use? _____

21. Muni painted $4\frac{1}{2}$ feet of a $10\frac{3}{4}$ ft long fence. How much of the fence was not painted? _____

Subtraction With Renaming

Name _____

Date _____

Subtract: $8 - 3\frac{6}{8} = n$

$$\begin{array}{r} 8 = 7\frac{8}{8} \\ - 3\frac{6}{8} = 3\frac{6}{8} \\ \hline \end{array}$$

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

$$\begin{array}{l} 8 = 7 + 1 \\ = 7 + \frac{8}{8} \\ = 7\frac{8}{8} \end{array}$$

simplest form

$$n = 4\frac{1}{4}$$

Rename each whole number as a mixed number.

1. $8 = 7\frac{\quad}{3}$

2. $4 = 3\frac{\quad}{6}$

3. $1 = \frac{\quad}{8}$

4. $6 = 5\frac{\quad}{4}$

5. $3 = 2\frac{\quad}{2}$

6. $9 = 8\frac{\quad}{10}$

7. $2 = 1\frac{\quad}{9}$

8. $5 = 4\frac{\quad}{7}$

Subtract.

9. $\begin{array}{r} 7 \\ - 4\frac{3}{4} \\ \hline \end{array}$

10. $\begin{array}{r} 10 \\ - 5\frac{3}{6} \\ \hline \end{array}$

11. $\begin{array}{r} 4 \\ - 1\frac{2}{10} \\ \hline \end{array}$

12. $\begin{array}{r} 6 \\ - 2\frac{5}{8} \\ \hline \end{array}$

13. $\begin{array}{r} 5 \\ - 3\frac{1}{3} \\ \hline \end{array}$

14. $\begin{array}{r} 4 \\ - 3\frac{2}{10} \\ \hline \end{array}$

15. $\begin{array}{r} 9 \\ - 7\frac{4}{5} \\ \hline \end{array}$

16. $\begin{array}{r} 2 \\ - 1\frac{8}{12} \\ \hline \end{array}$

17. $\begin{array}{r} 10 \\ - 3\frac{2}{8} \\ \hline \end{array}$

18. $\begin{array}{r} 7 \\ - 1\frac{9}{12} \\ \hline \end{array}$

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

20. $\begin{array}{r} 6 \\ - 5\frac{1}{2} \\ \hline \end{array}$

21. $\begin{array}{r} 8 \\ - 6\frac{6}{10} \\ \hline \end{array}$

22. $\begin{array}{r} 12 \\ - 10\frac{2}{6} \\ \hline \end{array}$

23. $\begin{array}{r} 9 \\ - 5\frac{3}{8} \\ \hline \end{array}$

Find the difference.

24. $4 - \frac{1}{5} = \underline{\hspace{2cm}}$

25. $1 - \frac{5}{6} = \underline{\hspace{2cm}}$

26. $8 - 7\frac{2}{9} = \underline{\hspace{2cm}}$

27. $6 - 2\frac{2}{3} = \underline{\hspace{2cm}}$

28. $17 - 6\frac{7}{10} = \underline{\hspace{2cm}}$

29. $5 - \frac{5}{6} = \underline{\hspace{2cm}}$

30. $3 - \frac{6}{8} = \underline{\hspace{2cm}}$

31. $10 - \frac{3}{9} = \underline{\hspace{2cm}}$

32. $2 - \frac{8}{10} = \underline{\hspace{2cm}}$

Problem Solving

33. Charise had 10 ft of twine. She used $4\frac{3}{4}$ ft to tie up a package. Does she have enough twine left to tie up another package if she needs $6\frac{1}{4}$ ft of twine? _____

Multiply Fractions by Fractions

Name _____

Date _____

Multiply: $\frac{2}{3} \times \frac{1}{4} = n$

$$\frac{2}{3} \times \frac{1}{4} = \frac{2 \times 1}{3 \times 4} = \frac{2}{12}$$

$$n = \frac{2}{12} = \frac{1}{6} \leftarrow \text{simplest form}$$

Multiply. Write each product in simplest form.

1. $\frac{1}{2} \times \frac{3}{4} =$ _____
2. $\frac{5}{6} \times \frac{1}{2} =$ _____
3. $\frac{1}{2} \times \frac{2}{5} =$ _____
4. $\frac{2}{3} \times \frac{1}{3} =$ _____
5. $\frac{3}{4} \times \frac{1}{3} =$ _____
6. $\frac{1}{3} \times \frac{1}{4} =$ _____
7. $\frac{4}{5} \times \frac{3}{4} =$ _____
8. $\frac{1}{4} \times \frac{2}{5} =$ _____
9. $\frac{3}{5} \times \frac{1}{2} =$ _____
10. $\frac{1}{9} \times \frac{2}{3} =$ _____
11. $\frac{2}{3} \times \frac{3}{4} =$ _____
12. $\frac{3}{7} \times \frac{1}{4} =$ _____

Compare. Write <, =, or >.

13. $\frac{1}{3} \times \frac{1}{5}$ _____ $\frac{1}{4} \times \frac{1}{3}$
14. $\frac{1}{2} \times \frac{1}{2}$ _____ $\frac{3}{4} \times \frac{1}{6}$
15. $\frac{1}{2} \times \frac{2}{3}$ _____ $\frac{2}{4} \times \frac{2}{3}$
16. $\frac{3}{4} \times \frac{1}{3}$ _____ $\frac{3}{5} \times \frac{1}{2}$
17. $\frac{3}{6} \times \frac{3}{6}$ _____ $\frac{1}{2} \times \frac{1}{2}$
18. $\frac{3}{4} \times \frac{3}{4}$ _____ $\frac{1}{2} \times \frac{5}{8}$

Find the missing fraction.

19. $\frac{4}{5} \times$ _____ $= \frac{2}{5} \times \frac{4}{5}$
20. $\frac{5}{7} \times \frac{1}{3} =$ _____ $\times \frac{5}{7}$
21. _____ $\times \frac{2}{3} = \frac{2}{3} \times \frac{4}{7}$

Problem Solving

22. Conrad has a book about the outdoors, and $\frac{2}{5}$ of the book is about camping. Conrad has read $\frac{1}{3}$ of the section on camping. What part of the book has Conrad read? _____
23. Lucy created a design with different shapes. Stars made up $\frac{1}{4}$ of all the shapes in the design. Eight ninths of the stars are red. What fraction of all the shapes are red stars? _____
24. Hector used $\frac{3}{4}$ of the money he earned to buy presents. He spent $\frac{1}{6}$ of the present money for his brother's gift. What part of his money did he spend on a gift for his brother? _____

Multiply Fractions and Whole Numbers

Name _____

Date _____

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

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

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

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

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

$$= \frac{6}{5} = 1\frac{1}{5}$$

$$\frac{3}{4} \text{ of } \$8 = \frac{3}{4} \times \frac{8}{1}$$

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

$$= \frac{24}{4} = \$6$$

Multiply.

1. $6 \times \frac{1}{2} =$ _____

2. $10 \times \frac{5}{8} =$ _____

3. $12 \times \frac{1}{7} =$ _____

4. $18 \times \frac{1}{3} =$ _____

5. $20 \times \frac{2}{5} =$ _____

6. $8 \times \frac{1}{4} =$ _____

7. $9 \times \frac{5}{9} =$ _____

8. $32 \times \frac{1}{4} =$ _____

9. $12 \times \frac{1}{3} =$ _____

10. $52 \times \frac{3}{4} =$ _____

11. $30 \times \frac{3}{10} =$ _____

12. $21 \times \frac{3}{7} =$ _____

13. $12 \times \frac{5}{6} =$ _____

14. $20 \times \frac{3}{5} =$ _____

15. $30 \times \frac{3}{5} =$ _____

16. $\frac{1}{5}$ of \$10 = _____

17. $\frac{3}{12}$ of \$36 = _____

18. $\frac{3}{4}$ of \$12 = _____

19. $\frac{2}{3}$ of \$18 = _____

20. $\frac{1}{3}$ of \$9 = _____

21. $\frac{2}{5}$ of \$10 = _____

22. $\frac{1}{2}$ of 19 = _____

23. $\frac{5}{6}$ of 9 = _____

24. $\frac{3}{7}$ of 63 = _____

Problem Solving

- Arthur walks $\frac{5}{8}$ mi to school. Jonathan rides a bus 8 times that far. How far does Jonathan ride to school?
- A recipe to serve 4 people requires $\frac{2}{3}$ cup of flour. Jamika needs 5 times as much flour. How much flour does she need?
- Delores read $\frac{2}{5}$ of the books on her reading list. There were 10 books on her list. How many books did Delores read?
- Alex had 4 yd of cloth. He used $\frac{3}{8}$ of it to make a shirt. How many yards of cloth did Alex use to make the shirt?

Multiply Fractions Using the GCF

Name _____

Date _____

Simplify fractions using the GCF.

$$\frac{3}{4} \times \frac{8}{9} = \frac{3 \times \cancel{8}^2}{\cancel{4}^1 \times 9}$$

GCF of 4 and 8: 4
GCF of 3 and 9: 3

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

$$\frac{3}{4} \times 20 = \frac{3}{4} \times \frac{20}{1}$$

GCF of 4 and 20: 4

$$= \frac{3 \times \cancel{20}^5}{\cancel{4}^1 \times 1} = \frac{3 \times 5}{1 \times 1} = \frac{15}{1} = 15$$

Complete each multiplication.

$$1. \frac{4}{9} \times \frac{7}{24} = \frac{\cancel{4}^1 \times 7}{9 \times \cancel{24}_3} = \frac{1 \times 7}{9 \times 3} = \frac{7}{27}$$

$$2. \frac{1}{4} \times 12 = \frac{1}{\cancel{4}_1} \times \frac{12}{1} = \frac{1 \times 12}{1 \times 1} = 12$$

Multiply using the GCF.

3. $\frac{2}{3} \times \frac{3}{5} =$ _____

4. $\frac{2}{5} \times \frac{1}{2} =$ _____

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

6. $\frac{3}{5} \times \frac{5}{6} =$ _____

7. $\frac{2}{3} \times \frac{9}{10} =$ _____

8. $\frac{1}{2} \times \frac{4}{7} =$ _____

9. $\frac{6}{7} \times \frac{3}{10} =$ _____

10. $\frac{2}{5} \times \frac{5}{6} =$ _____

11. $\frac{1}{6} \times \frac{8}{9} =$ _____

12. $\frac{5}{12} \times \frac{6}{25} =$ _____

13. $\frac{4}{7} \times \frac{7}{10} =$ _____

14. $\frac{9}{10} \times \frac{10}{27} =$ _____

15. $\frac{5}{12} \times \frac{12}{35} =$ _____

16. $\frac{2}{3} \times 15 =$ _____

17. $\frac{3}{8} \times 32 =$ _____

18. $40 \times \frac{4}{5} =$ _____

19. $50 \times \frac{7}{10} =$ _____

20. $\frac{3}{4} \times 6 =$ _____

21. $8 \times \frac{5}{12} =$ _____

22. $\frac{5}{6} \times 9 =$ _____

23. $15 \times \frac{9}{10} =$ _____

Problem Solving

24. Donald bought 50 lb of grass seed. He used $\frac{4}{5}$ of it for a new lawn. How many pounds did he use?

25. Ralph's dog weighs 24 lb and his cat weighs $\frac{5}{8}$ as much. How much does Ralph's cat weigh?

Rename Mixed Numbers as Fractions

Name _____

Date _____

Rename $4\frac{1}{3}$ as an improper fraction.

$$\begin{aligned} 4\frac{1}{3} &= \frac{(3 \times 4) + 1}{3} \\ &= \frac{12 + 1}{3} \\ &= \frac{13}{3} \end{aligned}$$

Remember: An improper fraction is a fraction with its numerator equal to or greater than its denominator.

Rename each as a fraction greater than one.

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

Problem Solving

Write each as an improper fraction.

- A plumber needs to cut $7\frac{11}{16}$ inches from a piece of pipe. _____
- Daryl cuts a board that is $9\frac{1}{3}$ ft long. _____
- A pencil is $3\frac{5}{16}$ inches long. _____
- Lyall has a piece of rope that is $8\frac{4}{9}$ yd long. _____
- Jessica is $4\frac{3}{4}$ ft tall. _____
- Lamont jogs $2\frac{3}{10}$ mi everyday. _____

Multiply Fractions and Mixed Numbers

Name _____

Date _____

Multiply: $\frac{3}{4} \times 1\frac{1}{5} = n$

$$\begin{aligned}\frac{3}{4} \times 1\frac{1}{5} &= \frac{3}{4} \times \frac{6}{5} \\ &= \frac{3 \times \overset{3}{\cancel{6}}}{\underset{2}{\cancel{4}} \times 5} \\ &= \frac{3 \times 3}{2 \times 5} = \frac{9}{10} \longrightarrow n = \frac{9}{10}\end{aligned}$$

Multiply: $7\frac{1}{2} \times \frac{4}{5} = n$

Use the distributive property.

$$\begin{aligned}&= \left(7 + \frac{1}{2}\right) \times \frac{4}{5} \\ &= \left(7 \times \frac{4}{5}\right) + \left(\frac{1}{2} \times \frac{4}{5}\right) \\ &= \frac{7 \times 4}{1 \times 5} + \frac{1 \times \overset{2}{\cancel{4}}}{\underset{1}{\cancel{2}} \times 5} \\ &= \frac{28}{5} + \frac{2}{5} = \frac{30}{5} = 6 \longrightarrow n = 6\end{aligned}$$

Find the product.

1. $2\frac{1}{4} \times \frac{1}{3} =$ _____

3. $\frac{1}{8} \times 2\frac{2}{5} =$ _____

5. $\frac{5}{6} \times 3\frac{1}{5} =$ _____

7. $\frac{1}{8} \times 3\frac{1}{4} =$ _____

2. $3\frac{1}{3} \times \frac{1}{2} =$ _____

4. $1\frac{1}{3} \times \frac{1}{6} =$ _____

6. $7\frac{1}{2} \times \frac{1}{4} =$ _____

8. $\frac{3}{8} \times 1\frac{5}{7} =$ _____

Multiply. Use the distributive property.

9. $\frac{3}{5} \times 3\frac{1}{2} =$ _____

11. $\frac{3}{5} \times 1\frac{3}{5} =$ _____

10. $\frac{6}{7} \times 4\frac{2}{3} =$ _____

12. $\frac{4}{9} \times 3\frac{3}{5} =$ _____

Problem Solving

13. Frank lives $\frac{3}{10}$ mile from school. Michelle lives $2\frac{1}{3}$ times as far from school as Frank. How far does Michelle live from school? _____

14. Jennifer had $3\frac{3}{4}$ lb of tomatoes. She used $\frac{1}{3}$ of that amount to make a salad. How many pounds did she use? _____

15. Daniel had $7\frac{3}{5}$ qt of strawberries. He used $\frac{1}{2}$ of that amount to make jam. How many quarts did he have left? _____

16. Shaya bought $2\frac{2}{3}$ lb of apples. She gave $\frac{1}{8}$ of that amount to her friend. How many pounds did she give to her friend? _____

Multiply Mixed Numbers

Name _____

Date _____

Multiply: $2\frac{1}{2} \times 2\frac{3}{5}$

$$2\frac{1}{2} \times 2\frac{3}{5} = \frac{5}{2} \times \frac{13}{5}$$

$$= \frac{\overset{1}{\cancel{5}} \times 13}{2 \times \underset{1}{\cancel{5}}} = \frac{1 \times 13}{2 \times 1}$$

$$= \frac{13}{2} = 6\frac{1}{2}$$

Multiply: $6 \times 2\frac{1}{8}$

$$6 \times 2\frac{1}{8} = \frac{6}{1} \times \frac{17}{8}$$

$$= \frac{\overset{3}{\cancel{6}} \times 17}{1 \times \underset{4}{\cancel{8}}} = \frac{3 \times 17}{1 \times 4}$$

$$= \frac{51}{4} = 12\frac{3}{4}$$

Multiply.

1. $1\frac{7}{8} \times 18 =$ _____ 2. $3\frac{3}{4} \times 4\frac{2}{3} =$ _____

3. $7\frac{3}{10} \times 2\frac{1}{3} =$ _____ 4. $5\frac{1}{2} \times 2\frac{1}{2} =$ _____

5. $3\frac{3}{8} \times 4\frac{1}{4} =$ _____ 6. $4\frac{2}{5} \times 25 =$ _____

7. $2\frac{1}{3} \times 3 =$ _____ 8. $5\frac{1}{2} \times 5 =$ _____

9. $4 \times 1\frac{1}{4} =$ _____ 10. $6 \times 1\frac{1}{5} =$ _____

11. $2\frac{1}{3} \times 4\frac{2}{3} =$ _____ 12. $3\frac{1}{5} \times 1\frac{7}{8} =$ _____

Compare. Write $<$, $=$, or $>$.

3. $1\frac{3}{5} \times 10$ _____ $1\frac{1}{2} \times 12$

14. $7 \times 2\frac{3}{7}$ _____ $3\frac{1}{8} \times 4$

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

16. $4\frac{2}{3} \times 3\frac{3}{4}$ _____ $7\frac{1}{2} \times 2\frac{1}{3}$

Problem Solving

7. Midori jogs on weekdays. If she jogs $3\frac{1}{10}$ miles on each of the 5 days, what is her total distance per week?

8. Emil jumped $4\frac{1}{2}$ ft in the high jump event at a track meet. Bill jumped $\frac{8}{9}$ as high as Emil. How high did Bill jump?

Reciprocals

Name _____

Date _____

Find the reciprocal.

$$9 = \frac{9}{1} \quad \frac{9}{1} \times \frac{1}{9} = 1$$

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

$\frac{1}{9}$ is the reciprocal of 9.

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

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

$\frac{3}{2}$ is the reciprocal of $\frac{2}{3}$.

$$1\frac{1}{4} = \frac{5}{4} \quad \frac{5}{4} \times \frac{4}{5} = 1$$

$$\frac{5}{4} \times \frac{4}{5} = 1$$

$\frac{4}{5}$ is the reciprocal of $1\frac{1}{4}$.

Write the missing reciprocal in each statement.

1. $8 \times \underline{\hspace{1cm}} = 1$ 2. $3 \times \underline{\hspace{1cm}} = 1$ 3. $\frac{1}{2} \times \underline{\hspace{1cm}} = 1$ 4. $\frac{1}{5} \times \underline{\hspace{1cm}} = 1$

5. $\frac{7}{8} \times \underline{\hspace{1cm}} = 1$ 6. $\frac{4}{5} \times \underline{\hspace{1cm}} = 1$ 7. $1\frac{1}{2} \times \underline{\hspace{1cm}} = 1$ 8. $2\frac{1}{4} \times \underline{\hspace{1cm}} = 1$

Are the numbers reciprocals? Write Yes or No.

9. 12, $\frac{1}{12}$ _____ 10. $\frac{1}{3}$, $\frac{2}{6}$ _____ 11. $\frac{4}{9}$, $\frac{9}{4}$ _____ 12. $\frac{5}{8}$, $\frac{8}{5}$ _____

13. $\frac{1}{10}$, 10 _____ 14. $2\frac{1}{5}$, $\frac{5}{11}$ _____ 15. $3\frac{1}{2}$, $\frac{2}{5}$ _____ 16. $1\frac{7}{8}$, $\frac{8}{15}$ _____

Write the reciprocal of each number.

7. 1 _____ 18. 20 _____ 19. $\frac{1}{3}$ _____ 20. $\frac{1}{8}$ _____

1. $\frac{9}{10}$ _____ 22. $\frac{7}{12}$ _____ 23. $\frac{10}{3}$ _____ 24. $\frac{9}{5}$ _____

5. $\frac{14}{9}$ _____ 26. $1\frac{1}{6}$ _____ 27. $2\frac{3}{4}$ _____ 28. $3\frac{1}{5}$ _____

Problem Solving Use the numbers in the box.

$\frac{1}{3}$	$\frac{5}{2}$	$\frac{9}{4}$	$\frac{7}{10}$
---------------	---------------	---------------	----------------

9. Write the fractions that are less than 1. Then write their reciprocals.

10. Write the fractions that are greater than 1. Then write their reciprocals.

1. What number times $\frac{5}{16}$ equals 1?

2. What number times 100 equals 1?

3. Use the numbers 7 and 11 to write a multiplication sentence with a product of 1.

Divide Whole Numbers by Fractions

Name _____

Date _____

Divide: $6 \div \frac{3}{8} = n$

$$\begin{aligned} 6 \div \frac{3}{8} &= \frac{6}{1} \div \frac{3}{8} \\ &= \frac{6}{1} \times \frac{8}{3} \\ &= \frac{\cancel{6}^2 \times 8}{1 \times \cancel{3}_1} = \frac{16}{1} = 16 \\ n &= 16 \end{aligned}$$

Multiply by the reciprocal of the divisor.

Divide: $7 \div \frac{2}{5} = n$

$$\begin{aligned} 7 \div \frac{2}{5} &= \frac{7}{1} \div \frac{2}{5} \\ &= \frac{7}{1} \times \frac{5}{2} \\ &= \frac{7 \times 5}{1 \times 2} = \frac{35}{2} = 17\frac{1}{2} \\ n &= 17\frac{1}{2} \end{aligned}$$

Complete each division.

$$\begin{aligned} 1. \quad 6 \div \frac{1}{4} &= \frac{6}{1} \div \frac{1}{4} \\ &= \frac{6}{1} \times \text{---} \\ &= \text{---} \end{aligned}$$

$$\begin{aligned} 2. \quad 3 \div \frac{2}{7} &= \frac{3}{1} \div \frac{2}{7} \\ &= \frac{3}{1} \times \text{---} \\ &= \text{---} \end{aligned}$$

Divide.

3. $12 \div \frac{2}{3} =$ _____

5. $6 \div \frac{1}{3} =$ _____

7. $9 \div \frac{4}{5} =$ _____

9. $8 \div \frac{2}{5} =$ _____

11. $1 \div \frac{1}{3} =$ _____

13. $2 \div \frac{7}{10} =$ _____

15. $7 \div \frac{2}{5} =$ _____

4. $16 \div \frac{5}{8} =$ _____

6. $10 \div \frac{1}{3} =$ _____

8. $18 \div \frac{3}{4} =$ _____

10. $21 \div \frac{2}{5} =$ _____

12. $25 \div \frac{1}{8} =$ _____

14. $15 \div \frac{3}{4} =$ _____

16. $14 \div \frac{1}{3} =$ _____

Problem Solving

17. Lee needs pieces of wire that are each $\frac{2}{5}$ ft long. How many pieces can he cut from a 6-ft length of wire?
- _____

18. A pie is divided into eight equal pieces. How many pieces would there be if it were divided into pieces only $\frac{1}{2}$ that size?
- _____

Divide Fractions by Fractions

Name _____

Date _____

Divide: $\frac{3}{4} \div \frac{1}{8} = n$

$$\begin{aligned}\frac{3}{4} \div \frac{1}{8} &= \frac{3}{4} \times \frac{8}{1} \\ &= \frac{\overset{2}{\cancel{3}} \times \overset{2}{\cancel{8}}}{\underset{1}{\cancel{4}} \times 1} = \frac{3 \times 2}{1 \times 1} \\ &= \frac{6}{1} = 6 \\ n &= 6\end{aligned}$$

Divide: $\frac{4}{5} \div \frac{2}{3} = n$

$$\begin{aligned}\frac{4}{5} \div \frac{2}{3} &= \frac{4}{5} \times \frac{3}{2} \\ &= \frac{\overset{2}{\cancel{4}} \times 3}{5 \times \underset{1}{\cancel{2}}} = \frac{2 \times 3}{5 \times 1} \\ &= \frac{6}{5} = 1\frac{1}{5} \\ n &= 1\frac{1}{5}\end{aligned}$$

Complete each division.

1. $\frac{2}{3} \div \frac{2}{9} = \frac{2}{3} \times \frac{9}{2} =$ _____

2. $\frac{4}{5} \div \frac{1}{10} = \frac{4}{5} \times \frac{10}{1} =$ _____

3. $\frac{7}{8} \div \frac{3}{4} = \frac{7}{8} \times$ _____ = _____

4. $\frac{5}{8} \div \frac{1}{3} =$ _____ \times _____ = _____

Divide.

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

6. $\frac{1}{4} \div \frac{1}{8} =$ _____

7. $\frac{5}{6} \div \frac{2}{3} =$ _____

8. $\frac{7}{8} \div \frac{1}{2} =$ _____

9. $\frac{2}{5} \div \frac{4}{15} =$ _____

10. $\frac{7}{12} \div \frac{1}{3} =$ _____

11. $\frac{1}{9} \div \frac{2}{3} =$ _____

12. $\frac{3}{8} \div \frac{1}{2} =$ _____

13. $\frac{2}{7} \div \frac{6}{7} =$ _____

14. $\frac{4}{5} \div \frac{9}{10} =$ _____

Compare. Write $<$, $=$, or $>$.

5. $\frac{5}{8} \div \frac{2}{3}$ _____ $\frac{7}{8} \div \frac{7}{9}$

16. $\frac{5}{6} \div \frac{1}{6}$ _____ $\frac{1}{6} \div \frac{5}{6}$

7. $\frac{1}{10} \div \frac{2}{5}$ _____ $\frac{1}{20} \div \frac{1}{5}$

18. $\frac{7}{10} \div \frac{1}{3}$ _____ $\frac{5}{18} \div \frac{1}{9}$

Problem Solving

9. How many glasses, each containing $\frac{1}{8}$ liter, can be poured from a half liter of milk?

10. Tom has a board $\frac{2}{3}$ yd long. How many $\frac{1}{8}$ -yd-long sections can he cut from the board?

Divide Fractions by Whole Numbers

Name _____

Date _____

Divide: $\frac{1}{5} \div 2 = n$

$$\begin{aligned}\frac{1}{5} \div 2 &= \frac{1}{5} \div \frac{2}{1} \\ &= \frac{1}{5} \times \frac{1}{2} \\ &= \frac{1 \times 1}{5 \times 2} = \frac{1}{10} \\ n &= \frac{1}{10}\end{aligned}$$

Divide: $\frac{2}{7} \div 4 = n$

$$\begin{aligned}\frac{2}{7} \div 4 &= \frac{2}{7} \div \frac{4}{1} \\ &= \frac{2}{7} \times \frac{1}{4} = \frac{2 \times 1}{7 \times 4} \\ &= \frac{1 \times 1}{7 \times 2} = \frac{1}{14} \\ n &= \frac{1}{14}\end{aligned}$$

Complete each division.

1. $\frac{1}{2} \div 3 = \frac{1}{2} \div \frac{3}{1}$
 $= \frac{1}{2} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

2. $\frac{3}{5} \div 15 = \frac{3}{5} \div \frac{15}{1}$
 $= \frac{3}{5} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Divide.

3. $\frac{1}{2} \div 5 = \underline{\hspace{2cm}}$

4. $\frac{2}{3} \div 5 = \underline{\hspace{2cm}}$

5. $\frac{5}{8} \div 3 = \underline{\hspace{2cm}}$

6. $\frac{4}{7} \div 2 = \underline{\hspace{2cm}}$

7. $\frac{2}{3} \div 6 = \underline{\hspace{2cm}}$

8. $\frac{1}{4} \div 4 = \underline{\hspace{2cm}}$

9. $\frac{3}{8} \div 3 = \underline{\hspace{2cm}}$

10. $\frac{7}{10} \div 2 = \underline{\hspace{2cm}}$

11. $\frac{1}{2} \div 7 = \underline{\hspace{2cm}}$

12. $\frac{9}{10} \div 5 = \underline{\hspace{2cm}}$

13. $\frac{4}{5} \div 8 = \underline{\hspace{2cm}}$

14. $\frac{7}{16} \div 14 = \underline{\hspace{2cm}}$

Problem Solving

15. Mrs. Jamison has a garden that is $\frac{1}{3}$ of an acre.
 She wants to divide it into 6 equal sections.
 What part of an acre will each section be?

16. During the fair, the fifth grade class uses $\frac{1}{4}$ of the gym.
 They divide the space into 5 equal sections for displays.
 What part of the gym is used for each display?

Divide Mixed Numbers by Fractions

Name _____

Date _____

Divide: $3\frac{1}{5} \div \frac{1}{10} = n$

$$\begin{aligned} 3\frac{1}{5} \div \frac{1}{10} &= \frac{16}{5} \div \frac{1}{10} = \frac{16}{5} \times \frac{10}{1} \\ &= \frac{16 \times \overset{2}{\cancel{10}}}{\underset{1}{\cancel{5}} \times 1} = \frac{16 \times 2}{1 \times 1} \\ &= \frac{32}{1} = 32 \end{aligned}$$

$n = 32$

Divide: $2\frac{1}{3} \div \frac{2}{5} = n$

$$\begin{aligned} 2\frac{1}{3} \div \frac{2}{5} &= \frac{7}{3} \div \frac{2}{5} \\ &= \frac{7}{3} \times \frac{5}{2} \\ &= \frac{35}{6} = 5\frac{5}{6} \end{aligned}$$

$n = 5\frac{5}{6}$

Divide.

1. $2\frac{1}{2} \div \frac{1}{4} =$ _____

2. $1\frac{5}{6} \div \frac{1}{12} =$ _____

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

4. $7\frac{3}{4} \div \frac{1}{4} =$ _____

5. $1\frac{1}{2} \div \frac{1}{3} =$ _____

6. $3\frac{1}{3} \div \frac{1}{4} =$ _____

7. $2\frac{1}{2} \div \frac{4}{9} =$ _____

8. $6\frac{1}{3} \div \frac{2}{5} =$ _____

9. $2\frac{1}{3} \div \frac{4}{9} =$ _____

10. $7\frac{1}{5} \div \frac{8}{15} =$ _____

Compare. Write $<$, $=$, or $>$.

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

12. $3\frac{1}{3} \div \frac{1}{6}$ _____ $8\frac{1}{2} \div \frac{5}{6}$

3. $2\frac{1}{5} \div \frac{3}{10}$ _____ $4\frac{1}{2} \div \frac{2}{5}$

14. $4\frac{5}{6} \div \frac{1}{3}$ _____ $9\frac{2}{3} \div \frac{2}{3}$

Problem Solving

5. Chris needs pieces of yarn $\frac{1}{2}$ dm long to use as strands of hair for a rag doll she is making. She has a $16\frac{1}{2}$ -dm length of yarn. How many strands of hair can she make?

6. A shop teacher had a board that was $8\frac{1}{2}$ feet long. He cut it into $\frac{1}{2}$ -ft sections. How many sections were there?

Divide Mixed Numbers

Name _____

Date _____

Divide: $2\frac{1}{2} \div 3\frac{1}{3} = n$

$$\begin{aligned} 2\frac{1}{2} \div 3\frac{1}{3} &= \frac{5}{2} \div \frac{10}{3} \\ &= \frac{5}{2} \times \frac{3}{10} \\ &= \frac{\cancel{5}^1 \times 3}{2 \times \cancel{10}_2} = \frac{1 \times 3}{2 \times 2} \\ &= \frac{3}{4} \\ n &= \frac{3}{4} \end{aligned}$$

Divide: $7 \div 1\frac{3}{4} = n$

$$\begin{aligned} 7 \div 1\frac{3}{4} &= \frac{7}{1} \div \frac{7}{4} \\ &= \frac{7}{1} \times \frac{4}{7} \\ &= \frac{\cancel{7}^1 \times 4}{1 \times \cancel{7}_1} = \frac{1 \times 4}{1 \times 1} \\ &= 4 \\ n &= 4 \end{aligned}$$

Divide.

1. $4\frac{1}{4} \div 2\frac{1}{8} =$ _____

3. $5 \div 1\frac{2}{3} =$ _____

5. $3\frac{1}{2} \div \frac{1}{3} =$ _____

7. $5\frac{1}{2} \div 1\frac{2}{3} =$ _____

9. $4\frac{2}{5} \div 2\frac{3}{4} =$ _____

11. $3\frac{3}{4} \div 5 =$ _____

13. $4\frac{3}{4} \div 2\frac{1}{4} =$ _____

2. $1\frac{1}{2} \div 4\frac{1}{2} =$ _____

4. $7 \div 1\frac{2}{5} =$ _____

6. $5\frac{1}{8} \div \frac{1}{16} =$ _____

8. $8\frac{1}{8} \div \frac{1}{8} =$ _____

10. $5 \div 6\frac{1}{4} =$ _____

12. $12 \div 1\frac{1}{3} =$ _____

14. $2\frac{1}{5} \div 1\frac{1}{10} =$ _____

Problem Solving

15. Charlie is cutting wire into $2\frac{1}{4}$ -ft pieces. How many pieces can he cut from a 45-ft roll? _____

16. Pablo took $9\frac{1}{2}$ hours to paint 5 pictures. How long did it take him to paint each picture if he spent the same amount of time on each? _____

17. Loren studied for $3\frac{1}{3}$ h. She took a break every $\frac{2}{3}$ h. How many breaks did she take? _____

Place Value to Billions

Name _____

Date _____

Billions			Millions			Thousands			Ones		
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones
		8	5	0	6	7	3	4	0	2	0

Standard Form:

8,506,734,020

Word Name: eight billion,
five hundred six million,
seven hundred thirty-four thousand,
twenty

Write the place of the underlined digit. Then write its value.

1. 671,248,101 _____
2. 4,725,921,001 _____
3. 50,978,206,978 _____
4. 72,360,521,000 _____
5. 141,624,805,093 _____
6. 850,139,122,952 _____

Write the number in standard form.

7. four hundred three million,
seventy one thousand, two hundred

8. nine billion, seven million, six hundred two

9. eighty-six billion, twelve thousand,
four hundred sixty

10. one hundred ten billion,
three hundred thousand

11. four hundred billion, six

12. twenty-four million

13. 180 million

14. 925 billion

Write the word name for each number. Use short word names when you can.

15. 13,481,309,526 _____
16. 750,000,000,000 _____
17. 191,000,000 _____

