Teacher Packet

Grade 5 Mathematics

Teacher At-Home Activity Packet

The At-Home Activity Packet includes 27 sets of practice problems that align to important math concepts that have likely been taught this year.

Since pace varies from classroom to classroom, feel free to select the pages that align with the topics your students have covered.

The At-Home Activity Packet includes instructions to the parent and can be printed and sent home.

This At-Home Activity Packet—Teacher Guide includes all the same practice sets as the Student version with the answers provided for your reference.

See the Grade 5 Math concepts covered in this packet!

Grade 5 Math concepts covered in this packet

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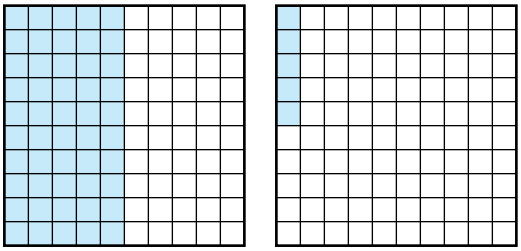
1 The decimal grid in each model represents 1 whole. Shade each model to show the decimal number below the model.



0.5 **0.05**

Complete the comparison statements.

0.05 is $\frac{1}{10}$ of 0.5.

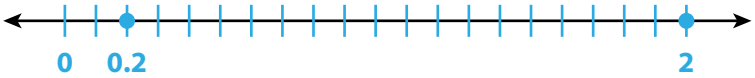
0.5 is 10 times the value of 0.05.

Complete the equations.

$0.5 \div 10 = 0.05$

$0.05 \times 10 = 0.5$

2 Draw a number line from 0 to 2. Then draw and label points at 2 and 0.2.



Use the number line to explain why 2 is 10 times the value of 0.2.

Answers will vary.
Possible answer: The number 2 is 10 times the value of 0.2 because 2 is 10 times as far from 0 as the distance from 0.2 to 0.

Complete the equations to show the relationship between 2 and 0.2.

$0.2 \times 10 = 2$

$2 \div 10 = 0.2$

3 Which type of model do you like best? Explain why.

Answers will vary.
Possible answer: I liked using decimal grids to see the relationship between each decimal number and 1 whole, but I thought it was easier to show the distance of numbers from 0 on a number line.

Multiply or divide.

1. $6 \div 10$ — **0.6**
2. $0.6 \div 10$ — **0.06**
3. $6 \div 10^2$ — **0.06**
4. $0.6 \div 10^2$ — **0.006**
5. $6 \div 10^3$ — **0.006**
6. $60 \div 10^3$ — **0.06**
7. 0.3×10 — **3**
8. 0.3×10^2 — **30**
9. 0.3×10^3 — **300**
10. 0.03×10^2 — **3**
11. 0.003×10^2 — **0.3**
12. 0.03×10^3 — **30**
13. $72 \div 10$ — **7.2**
14. 0.72×10^2 — **72**
15. $7{,}200 \div 10^3$ — **7.2**
16. $20 \div 10^2$ — **0.2**
17. 0.9×10^3 — **900**
18. 0.001×10^2 — **0.1**
19. $54 \div 10$ — **5.4**
20. $150 \div 10^3$ — **0.15**
21. 0.46×10^3 — **460**

22. What strategies did you use to solve the problems? Explain.

Answers will vary.
Possible answer: In problem 2, I divided a decimal by 10, so I moved the decimal point one place to the left. In problem 7, I multiplied a decimal by 10, so I moved the decimal point one place to the right.

Reading a Decimal in Word Form

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What is the word form of each decimal?

1. 0.2
   two tenths

2. 0.02
   two hundredths

3. 0.002
   two thousandths

4. 0.12
   twelve hundredths

5. 0.012
   twelve thousandths

6. 0.102
   one hundred two thousandths

7. 1.002
   one and two thousandths

8. 9.4
   nine and four tenths

9. 90.04
   ninety and four hundredths

10. 0.94
    ninety-four hundredths

11. 500.2
    five hundred and two tenths

12. 8.008
    eight and eight thousandths

13. 700.06
    seven hundred and six hundredths

14. 6.335
    six and three hundred thirty-five thousandths

15. 3,000.001
    three thousand and one thousandth

16. What strategies did you use to help you read the decimals? Explain.

    Answers will vary.
    Possible answer: I read the digits to the right of the decimal point and used the name of the least place value.

Writing a Decimal in Standard Form

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What decimal represents each number?

1 one and six tenths

1.6

2 eight and eleven hundredths

8.11

3 $6 \times 1 + 5 \times \frac{1}{10}$

6.5

4 thirteen and thirteen thousandths

13.013

5 $2 \times 10 + 7 \times \frac{1}{10} + 3 \times \frac{1}{100}$

20.73

6 $4 \times 1 + 1 \times \frac{1}{100} + 9 \times \frac{1}{1,000}$

4.019

7 five hundred twelve thousandths

0.512

8 $8 \times 100 + 2 \times \frac{1}{10} + 8 \times \frac{1}{1,000}$

800.208

9 $2 \times 1 + 4 \times \frac{1}{100}$

2.04

10 forty-two and forty-one hundredths

42.41

11 $7 \times 100 + 2 \times 10 + 3 \times 1 + 6 \times \frac{1}{10}$

723.6

12 twelve and sixty-eight thousandths

12.068

13 $3 \times 1{,}000 + 6 \times 100 + 3 \times 10 + 7 \times \frac{1}{10} + 2 \times \frac{1}{100} + 8 \times \frac{1}{1,000}$

3,630.728

14 nine hundred fifty-six and four hundred twenty-seven thousandths

956.427

15 How was writing decimals for numbers in word form different from numbers in expanded form?

Answers will vary.
Possible answer: For numbers in word form, I had to know what digits the words represent. In expanded form, the digits are given.

Write the symbol <, =, or > in each comparison statement.

1. 0.02 > 0.002
2. 0.05 < 0.5
3. 0.74 < 0.84
4. 0.74 > 0.084
5. 1.2 < 1.25
6. 5.130 = 5.13
7. 3.201 > 3.099
8. 0.159 < 1.590
9. 8.269 > 8.268
10. 4.60 > 4.060
11. 302.026 > 300.226
12. 0.237 > 0.223
13. 3.033 < 3.303
14. 9.074 < 9.47
15. 6.129 < 6.19
16. 567.45 > 564.75
17. 78.967 > 78.957
18. 5.346 < 5.4
19. 12.112 < 12.121
20. 26.2 = 26.200
21. 100.32 > 100.232

22. What strategies did you use to solve the problems? Explain.

Answers will vary.
Possible answer: I looked at the greatest place value for which the numbers had different digits. I compared these digits to tell whether the first number was greater or less than the second number.

Round each decimal to the nearest tenth.

1. 0.32
   0.3
2. 3.87
   3.9
3. 0.709
   0.7
4. 12.75
   12.8
5. 12.745
   12.7
6. 645.059
   645.1

Round each decimal to the nearest hundredth.

7. 1.079
   1.08
8. 0.854
   0.85
9. 0.709
   0.71
10. 12.745
    12.75
11. 645.059
    645.06
12. 50.501
    50.50

Round each decimal to the nearest whole number.

13. 1.47
    1
14. 12.5
    13
15. 200.051
    200

16. Write two different decimals that are the same value when rounded to the nearest tenth. Explain why the rounded values are the same.

    Answers will vary.
    Possible answer: The decimals 2.73 and 2.74 are both 2.7 when rounded to the nearest tenth. Both decimals are between 2.7 and 2.8, and both are closer to 2.7.

17. Round 1.299 to the nearest tenth and to the nearest hundredth. Explain why the rounded values are equivalent.

    Answers will vary.
    Possible answer: Use a place value chart. Consider the hundredths place (9) to round 1.299 to the nearest tenth, 1.3. Consider the thousandths place (9) to round to the nearest hundredth. In this case the hundredth would be rounded up, 1.30; which is equivalent to 1.3.

Estimate. Circle all the problems with products between 3,000 and 9,000. Then find the exact products of only the problems you circled.

1 132 × 34 = **4,488**

2 247 × 15 = **3,705**

3 145 × 23 = **3,335**

4 308 × 12 = **3,696**

5 158 × 41 = **6,478**

6 364 × 32

7 400 × 29

8 254 × 17 = **4,318**

9 187 × 42 = **7,854**

10 216 × 12

11 323 × 18 = **5,814**

12 194 × 26 = **5,044**

13 317 × 14 = **4,438**

14 385 × 31

15 285 × 27 = **7,695**

16 What strategies did you use to solve the problems? Explain.

Answers will vary. Possible answer: In #2, I used the distributive property to find the partial products and then added them to find the product.

The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1 580 × 30 = **17,400**

2 3,104 × 18 = **55,872**

3 1,482 × 38 = **56,316**

4 1,085 × 17 = **18,445**

5 1,236 × 55 = **67,980**

6 1,625 × 18 = **29,250**

7 2,105 × 13 = **27,365**

8 1,788 × 15 = **26,820**

9 2,500 × 19 = **47,500**

10 648 × 32 = **20,736**

11 2,409 × 23 = **55,407**

12 306 × 62 = **18,972**

13 2,417 × 24 = **58,008**

14 650 × 35 = **22,750**

15 962 × 44 = **42,328**

Answers

20,736	17,400	27,365	47,500	55,872
18,972	18,445	26,820	67,980	56,316
22,750	29,250	55,407	42,328	58,008

Using Estimation and Area Models to Divide

Check each answer by multiplying the divisor by the quotient. If the answer is incorrect, cross out the answer and write the correct answer.

Division Problems	Student Answers	
516 ÷ 12	~~48~~ 43	Check: 12 × 48 = 576
837 ÷ 31	27	**Check: 31 × 27 = 837**
351 ÷ 13	~~57~~ **27**	**Check: 13 × 57 = 741**
918 ÷ 54	~~22~~ **17**	**Check: 54 × 22 = 1,188**
896 ÷ 32	~~23~~ **28**	**Check: 32 × 23 = 736**
1,482 ÷ 78	~~14~~ **19**	**Check: 78 × 14 = 1,092**
1,012 ÷ 11	~~82~~ **92**	**Check: 11 × 82 = 902**
1,344 ÷ 56	24	**Check: 56 × 24 = 1,344**

1 Explain how you could know that the answers to two of the problems are incorrect without multiplying. **Answers will vary. Possible answer: I can estimate 351 ÷ 13 using the compatible numbers 350 and 10, with a result of 35. The divisor 13 is greater than 10, so I know the quotient is less than 35 and cannot be 57. I can also estimate 896 ÷ 32 using the compatible numbers 900 and 30, with a result of 30. I know the quotient is closer to 30 than 20.**

Using Area Models and Partial Quotients to Divide

Estimate. Circle all the problems that will have quotients greater than 30. Then find the exact quotients of only the problems you circled.

1. 540 ÷ 12
   45
2. 798 ÷ 38
   _____
3. 429 ÷ 11
   39
4. 931 ÷ 19
   49
5. 925 ÷ 25
   37
6. 390 ÷ 15
   _____
7. 1,071 ÷ 51
   _____
8. 1,326 ÷ 13
   102
9. 1,856 ÷ 32
   58
10. 2,952 ÷ 72
    41
11. 1,869 ÷ 89
    _____
12. 1,798 ÷ 29
    62

13. Select a problem you did not circle. Describe two different ways you could use estimation to tell the quotient is not greater than 30.

Answers will vary.
Possible answer: In problem 2, I divided the compatible numbers 800 and 40 to estimate a quotient of 20. A different way would be to multiply the divisor by multiples of 10, resulting in 38 × 10 = 380, 38 × 20 = 760, and 38 × 30 = 1,140. The dividend 798 is less than 1,140, so the quotient is less than 30.

Circle all the problems with sums less than 5.
Then find the exact sums of only the problems you circled.

1. 0.24 + 4.25
   4.49
2. 4.8 + 0.16
   4.96
3. 2.31 + 2.075
   4.385
4. 2.31 + 2.7
5. 0.909 + 4.09
   4.999
6. 3.99 + 1.109
7. 2.675 + 2.325
8. 3.775 + 0.225
   4
9. 2.06 + 2.933
   4.993
10. 2.6 + 2.933
11. 1.809 + 3.091
    4.9
12. 3.01 + 1.991
13. 1.83 + 3.1 + 0.1
14. 0.012 + 3.79 + 1.101
    4.903
15. 2.6 + 2.04 + 0.099
    4.739

16. What strategies did you use to solve the problems?

Answers will vary.
Possible answer: In problem 1, I used place value to find the sum of 4 ones, 4 tenths, and 9 hundredths. In problem 2, I stacked the decimals vertically, aligning the 8 in 4.8 with the 1 in 0.16.

Subtracting Decimals to Hundredths

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The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1 7.5 − 1.2

6.3

2 10.75 − 4.13

6.62

3 20.2 − 14.8

5.4

4 6.12 − 0.7

5.42

5 41.5 − 33.25

8.25

6 15.9 − 8.92

6.98

7 105.53 − 99.28

6.25

8 9.46 − 3.68

5.78

9 74 − 65.9

8.1

10 5.05 − 0.56

4.49

11 31.27 − 23.67

7.6

12 256.4 − 248.38

8.02

13 12 − 4.39

7.61

14 1,280.01 − 1,272.77

7.24

15 500.2 − 494.94

5.26

Answers

6.25	5.26	6.62	8.1	7.6
4.49	8.25	7.61	6.98	5.42
7.24	5.4	8.02	5.78	6.3

Solve the problems.

1 Lori needs at least 12 liters of water to fill a water cooler. She has a container with 4.55 liters of water, a container with 3.25 liters of water, and a container with 4.85 liters of water. Does she have enough water? Use estimation only to decide. Explain why you are confident in your estimate.

Yes, Lori has at least 12 liters of water. Answers will vary. Possible answer: For my estimate, I added 4.5 + 3 + 4.5, for a total of 12 liters. Since the actual amounts are all greater, I am confidant that she has more water than I estimated.

2 Nia wants the total weight of her luggage to be no more than 50 kilograms. She has three suitcases that weigh 15.8 kilograms, 17.42 kilograms, and 16.28 kilograms. Is the total weight within the limit? Use only estimation to decide. Explain how you know your estimate gives you the correct answer.

Yes, the total weight is within the limit. Answers will vary. Possible answer: For my estimate, I added 16 + 17.5 + 16.5, for a total of 50 kilograms. Since the actual weights are all less than the numbers I added, the actual total weight will be less than 50 kilograms.

3 Omar measures one machine part with length 4.392 centimeters and another part with length 6.82 centimeters. What is the difference in length? Use estimation to check your answer for reasonableness.

The difference in length is 6.82 − 4.392, or 2.428 centimeters. Answers will vary. Possible answer: To estimate, I subtract 6.8 − 4.4 to find a difference of about 2.4 centimeters. Since 2.4 is close to 2.428, my answer is reasonable.

4 Kyle wants to buy a hat for $5.75, a T-shirt for $7.65, and a keychain for $3.15. He has $16. Does he have enough money? Use estimation only to decide. Explain why you are confident in your estimate.

No, Kyle does not have enough money. Answers will vary. Possible answer: For my estimate, I added $5.50 + $7.50 + $3, for a total of $16. Since the actual amounts are all greater, the actual cost will be greater than $16.

5 For his hiking club, Ricardo is making a container of trail mix with 3.5 kilograms of nuts. He has 1.78 kilograms of peanuts and 0.625 kilograms of almonds. The rest of the nuts will be cashews. How many kilograms of cashews does he need? Use estimation to check your answer for reasonableness.

The total weight of the peanuts and almonds is 1.78 + 0.625, or 2.405 kilograms. He will need 3.5 − 2.405, or 1.095 kilograms of cashews. Answers will vary. Possible answer: To estimate, I add 1.8 + 0.6 to find a total of about 2.4 kilograms for the peanuts and almonds. Then I subtract 3.5 − 2.4 to estimate that he needs about 1.1 kilograms of cashews. Since 1.1 is close to 1.095, my answer is reasonable.

6 Suppose you want to be sure that the total cost of three items does not go over a certain amount. How can you use estimation only to solve the problem?

Answers will vary. Possible answer: When I estimate, I use amounts that are greater that the actual amounts for all three items.

Multiply.

1. 3×0.2 — **0.6**
2. 3×0.03 — **0.09**
3. 3×0.23 — **0.69**
4. 4×0.08 — **0.32**
5. 4×1.1 — **4.4**
6. 4×1.18 — **4.72**
7. 6×0.07 — **0.42**
8. 6×1.1 — **6.6**
9. 6×1.17 — **7.02**
10. 21×0.05 — **1.05**
11. 21×1.05 — **22.05**
12. 21×2.05 — **43.05**
13. 9×3.25 — **29.25**
14. 5×0.87 — **4.35**
15. 11×3.68 — **40.48**
16. 16×6.4 — **102.4**
17. 7×6.89 — **48.23**
18. 32×5.12 — **163.84**

19. How did you know where to put the decimal point in problem 6?

Answers will vary. Possible answer: I used partial products. The product was 472 hundredths. To show hundredths, I placed the decimal point so that there are 2 digits after the decimal point, resulting in the product 4.72.

Multiplying Decimals Less Than 1

Multiply.

1. 0.5×3 — **1.5**
2. 0.5×0.3 — **0.15**
3. 0.5×0.03 — **0.015**
4. 6×0.2 — **1.2**
5. 0.6×0.2 — **0.12**
6. 0.06×0.2 — **0.012**
7. 0.8×0.1 — **0.08**
8. 0.8×0.2 — **0.16**
9. 0.8×0.3 — **0.24**
10. 0.4×0.02 — **0.008**
11. 0.4×0.04 — **0.016**
12. 0.4×0.12 — **0.048**
13. 0.3×0.4 — **0.12**
14. 0.6×0.4 — **0.24**
15. 0.6×0.8 — **0.48**
16. 0.01×0.5 — **0.005**
17. 0.05×0.5 — **0.025**
18. 0.25×0.5 — **0.125**

19. Describe a pattern you noticed when you were completing the problem set.

Answers will vary. Possible answer: In problem 7 through problem 9, one factor was always 0.8 while the other factor increased by 0.1 each time. The result was that the product increased by 0.8×0.1, or 0.08, each time.

The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1 0.3×1.2

0.36

2 1.2×0.4

0.48

3 1.2×1.1

1.32

4 0.3×12.1

3.63

5 4.4×1.1

4.84

6 0.02×1.8

0.036

7 7.1×5.1

36.21

8 6.6×0.02

0.132

9 2.4×4.8

11.52

10 9.2×5.24

48.208

11 1.2×1.24

1.488

12 8.4×6.2

52.08

13 4.2×3.21

13.482

14 4.25×8.5

36.125

15 1.9×2.78

5.282

Answers

0.132	1.32	13.482	1.488	48.208
4.84	0.48	52.08	11.52	5.282
36.125	0.036	0.36	3.63	36.21

Multiply to check if the student's answer is reasonable. If not, cross out the answer and write the correct quotient.

Division Problems	Student Answers	
0.88 ÷ 11	~~0.8~~ 0.08	Product: 11 × 0.8 = 8.8
5.6 ÷ 8	~~0.07~~ **0.7**	**Product: 8 × 0.07 = 0.56**
7.2 ÷ 9	*0.8*	**Product: 9 × 0.8 = 7.2**
25.35 ÷ 5	~~5.7~~ **5.07**	**Product: 5 × 5.7 = 28.5**
21.7 ÷ 7	*3.1*	**Product: 7 × 3.1 = 21.7**
14.4 ÷ 12	~~0.12~~ **1.2**	**Product: 12 × 0.12 = 1.44**
96.16 ÷ 8	~~12.2~~ **12.02**	**Product: 8 × 12.2 = 97.6**
60.18 ÷ 2	~~30.9~~ **30.09**	**Product: 2 × 30.9 = 61.8**

1 Can an answer be incorrect even if it looks reasonable? Explain.

Answers will vary. Possible answer: Yes, an answer that looks reasonable can be incorrect. For example, in a problem such as 60.18 ÷ 2, I could estimate that 60.18 is close to 60 and 60 ÷ 2 = 30. Since 30.9 is close to 30, it appears to be a reasonable answer, even though it is incorrect.

Dividing by Hundredths

Divide.

1 1 ÷ 0.25

4

2 4 ÷ 0.25

16

3 3.75 ÷ 0.25

15

4 6.5 ÷ 0.25

26

5 1.8 ÷ 9

0.2

6 1.8 ÷ 0.9

2

7 1.8 ÷ 0.09

20

8 225 ÷ 75

3

9 22.5 ÷ 7.5

3

10 2.25 ÷ 0.75

3

11 0.36 ÷ 0.06

6

12 6.36 ÷ 0.06

106

13 36.36 ÷ 0.06

606

14 9 ÷ 2.25

4

15 13.5 ÷ 2.25

6

16 Describe a pattern you noticed when you were completing the problem set.

Answers will vary. Possible answer: In problems 5 through 7, the value of the divisor was reduced by one place value, (9, 0.9, and 0.09) while the dividend remained the same. The value of the quotient was increased by one place value (0.2, 2, 20). So when a divisor is smaller, it makes the quotient larger.

Adding Fractions with Unlike Denominators

Add.

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

$\frac{3}{4}$

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

$\frac{7}{8}$

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

$\frac{5}{6}$

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

$\frac{7}{12}$

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

$\frac{11}{12}$

6 $\frac{1}{3} + \frac{2}{5}$

$\frac{11}{15}$

7 $\frac{5}{6} + \frac{2}{3}$

$\frac{9}{6}$

8 $\frac{3}{4} + \frac{5}{6}$

$\frac{19}{12}$

9 $\frac{7}{9} + \frac{1}{6}$

$\frac{17}{18}$

10 $\frac{7}{8} + \frac{2}{3}$

$\frac{37}{24}$

11 $\frac{3}{2} + \frac{3}{5}$

$\frac{21}{10}$

12 $\frac{9}{8} + \frac{5}{6}$

$\frac{47}{24}$

13 What is a different common denominator you could use in problem 2? Describe how you would add the fractions using this different common denominator. Is the result equivalent to the sum found in problem 2?

Answers will vary.

Possible answer: I could use 16 as a common denominator. To add, I would replace $\frac{1}{2}$ and $\frac{3}{8}$ with equivalent fractions with the common denominator of 16. The result would be $\frac{8}{16} + \frac{6}{16} = \frac{14}{16}$. The sum is equivalent to the one found above, because $\frac{14}{16}$ has the same value as $\frac{7}{8}$.

Adding with Mixed Numbers

Add.

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

5

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

$5\frac{1}{8}$

3 $4\frac{7}{8} + \frac{1}{2}$

$5\frac{3}{8}$

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

$3\frac{1}{12}$

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

$3\frac{5}{12}$

6 $2\frac{3}{4} + \frac{5}{6}$

$3\frac{7}{12}$

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

$2\frac{9}{10}$

8 $2\frac{4}{5} + 3\frac{1}{2}$

$6\frac{3}{10}$

9 $3\frac{2}{3} + 3\frac{2}{5}$

$7\frac{1}{15}$

10 $4\frac{5}{8} + 2\frac{2}{3}$

$7\frac{7}{24}$

11 $5\frac{3}{4} + 2\frac{3}{5}$

$8\frac{7}{20}$

12 $3\frac{5}{6} + 2\frac{7}{8}$

$6\frac{17}{24}$

13 What strategy did you use to solve problem 3? Describe each step.

Answers will vary. Possible answer: I used a number line. I know $\frac{1}{2}$ equals $\frac{4}{8}$, so I divided the number line into eighths, started at $4\frac{7}{8}$, and jumped right four eighths to $5\frac{3}{8}$.

Subtracting Fractions with Unlike Denominators

Teacher Packet

Subtract.

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

$\frac{1}{4}$

2 $\frac{1}{2} - \frac{3}{8}$

$\frac{1}{8}$

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

$\frac{1}{6}$

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

$\frac{1}{12}$

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

$\frac{5}{12}$

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

$\frac{7}{12}$

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

$\frac{1}{8}$

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

$\frac{1}{10}$

9 $\frac{3}{4} - \frac{3}{5}$

$\frac{3}{20}$

10 $\frac{2}{3} - \frac{3}{5}$

$\frac{1}{15}$

11 $\frac{5}{6} - \frac{3}{8}$

$\frac{11}{24}$

12 $\frac{7}{8} - \frac{2}{3}$

$\frac{5}{24}$

13 How could you check your work in problem 4? Describe each step.

Answers will vary. Possible answer: I could add $\frac{1}{12} + \frac{1}{4}$ to check that the sum is $\frac{1}{3}$. When I replace $\frac{1}{4}$ with an equivalent fraction with the common denominator of 12, the result is $\frac{1}{12} + \frac{3}{12} = \frac{4}{12}$. I know $\frac{4}{12}$ and $\frac{1}{3}$ are equivalent fractions, so my work is correct.

Subtract.

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

$1\frac{7}{8}$

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

$1\frac{5}{8}$

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

$1\frac{3}{8}$

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

$1\frac{5}{6}$

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

$\frac{11}{12}$

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

$1\frac{5}{12}$

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

$3\frac{9}{10}$

8 $5\frac{3}{8} - 4\frac{1}{6}$

$1\frac{5}{24}$

9 $8\frac{2}{3} - 3\frac{4}{5}$

$4\frac{13}{15}$

10 $6\frac{2}{5} - 3\frac{3}{4}$

$2\frac{13}{20}$

11 $9\frac{3}{8} - 3\frac{2}{3}$

$5\frac{17}{24}$

12 $14\frac{1}{8} - 9\frac{5}{6}$

$4\frac{7}{24}$

13 What pattern did you notice in problems 1 through 3? Explain how this helped you subtract.

Answers will vary. Possible answer: Each time I subtracted $\frac{2}{8}$ more from $2\frac{1}{8}$. This helped me subtract because the difference was $\frac{2}{8}$ less each time.

Estimating in Word Problems with Fractions

Teacher Packet

Solve the problems. Estimate to tell if your solution is reasonable. Show your work.

1 Jim mails one package that weighs $\frac{3}{8}$ pound and another that weighs $\frac{2}{3}$ pound. What is the total weight of both packages?

Estimate: $\frac{3}{8}$ is close to $\frac{1}{2}$ and $\frac{2}{3}$ is close to $\frac{1}{2}$. I add $\frac{1}{2} + \frac{1}{2}$ to estimate a total weight of about 1 pound.

Solve: $\frac{3}{8} + \frac{2}{3} = \frac{9}{24} + \frac{16}{24} = \frac{25}{24}$, or $1\frac{1}{24}$ pounds. Since 1 is close to $1\frac{1}{24}$, my solution is reasonable.

2 Rosa needs $5\frac{1}{4}$ yards of ribbon for a crafts project. She already has $2\frac{7}{8}$ yards of ribbon. How many more yards of ribbon does she need to buy?

Estimate: $5\frac{1}{4}$ is a benchmark and $2\frac{7}{8}$ is close to 3. She needs $5\frac{1}{4} - 3$, or about $2\frac{1}{4}$ more yards.

Solve: $5\frac{1}{4} - 2\frac{7}{8} = 5\frac{2}{8} - 2\frac{7}{8} = 2\frac{3}{8}$ yards of ribbon. Since $2\frac{1}{4}$ is close to $2\frac{3}{8}$, my solution is reasonable.

3 To make fruit punch, Tyrone needs $3\frac{3}{8}$ quarts of orange juice and $3\frac{3}{4}$ quarts of cranberry juice. How many quarts of juice does he need in all?

Estimate: $3\frac{3}{8}$ is close to $3\frac{1}{2}$ and $3\frac{3}{4}$ is a benchmark. So, $3\frac{1}{2} + 3\frac{3}{4} = 3\frac{2}{4} + 3\frac{3}{4} = 6\frac{5}{4}$, or about $7\frac{1}{4}$ quarts.

Solve: $3\frac{3}{8} + 3\frac{3}{4} = 3\frac{3}{8} + 3\frac{6}{8} = 6\frac{9}{8}$, or $7\frac{1}{8}$ quarts. Since $7\frac{1}{4}$ is close to $7\frac{1}{8}$, my solution is reasonable.

Estimating in Word Problems with Fractions *continued*

4 Lin spent $\frac{5}{6}$ hour on math homework and $1\frac{3}{4}$ hours on science homework. How many hours in all did she spend on homework for both subjects?

Estimate: $\frac{5}{6}$ is close to 1 and $1\frac{3}{4}$ is close to 2. I add $1 + 2$ to estimate about 3 hours.

Solve: $\frac{5}{6} + 1\frac{3}{4} = \frac{10}{12} + 1\frac{9}{12} = 1\frac{19}{12}$, or $2\frac{7}{12}$ hours. Since 3 is close to $2\frac{7}{12}$, my solution is reasonable.

5 Sandra rode her bike $9\frac{1}{3}$ miles on Monday and $6\frac{4}{5}$ miles on Tuesday. How many more miles did she ride on Monday than on Tuesday?

Estimate: $9\frac{1}{3}$ is close to $9\frac{1}{2}$ and $6\frac{4}{5}$ is close to 7. She rode about $9\frac{1}{2} - 7$, or $2\frac{1}{2}$ miles more.

Solve: $9\frac{1}{3} - 6\frac{4}{5} = 9\frac{5}{15} - 6\frac{12}{15} = 2\frac{8}{15}$ miles. Since $2\frac{1}{2}$ is close to $2\frac{8}{15}$, my solution is reasonable.

6 How can you make a high estimate for the sum of two fractions in a word problem?

Answers will vary. Possible answer: For each fraction, I can use a benchmark fraction that is greater than that fraction when I estimate the sum. The estimated sum will be greater than the actual sum.

Solve each problem.

1 Roger has 4 gallons of orange juice. He puts the same amount of juice into each of 5 pitchers. How many gallons of orange juice are in 1 pitcher?

$\frac{4}{5}$ gallon

2 Marta has 8 cubic feet of potting soil and 3 flower pots. She wants to put the same amount of soil in each pot. How many cubic feet of soil will she put in each flower pot?

$\frac{8}{3}$ or $2\frac{2}{3}$ cubic feet

3 Greg made 27 ounces of potato salad to serve to 10 guests at a picnic. If each serving is the same size, how much potato salad will each guest receive?

$\frac{27}{10}$ or $2\frac{7}{10}$ ounces

4 Chandra spends 15 minutes doing 4 math problems. She spends the same amount of time on each problem. How many minutes does she spend on each problem?

$\frac{15}{4}$ or $3\frac{3}{4}$ minutes

5 Taylor has 5 yards of gold ribbon to decorate 8 costumes for the school play. She plans to use the same amount of ribbon for each costume. How many yards of ribbon will she use for each costume?

$\frac{5}{8}$ yard

6 DeShawn is using 7 yards of wire fencing to make a play area for his puppy. He wants to cut the fencing into 6 pieces of equal length. How long will each piece of fencing be?

$\frac{7}{6}$ or $1\frac{1}{6}$ yards

7 What is a division word problem that can be represented by $\frac{4}{3}$?

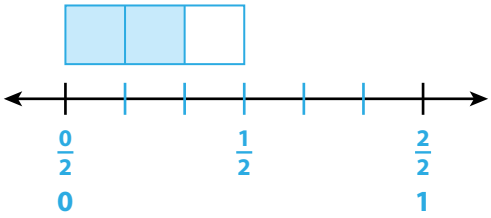
Answers will vary. Possible answer: Three friends share 4 ounces of sunflower seeds equally. How many ounces of sunflower seeds does each friend get?

Understanding of Multiplying by a Fraction

1 Draw a number line model to represent each multiplication problem. Then solve the problem.

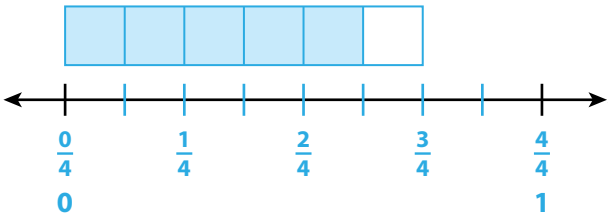
$\frac{2}{3} \times \frac{1}{2}$

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



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

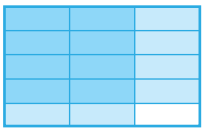
$\frac{5}{6} \times \frac{3}{4} = \frac{5}{8}$



2 Draw an area model to represent each multiplication problem. Then solve the problem.

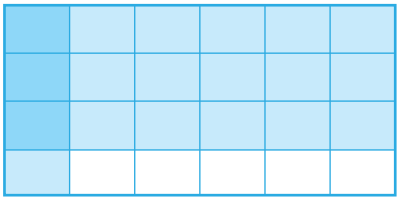
$\frac{4}{5} \times \frac{2}{3}$

$\frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$



$\frac{3}{4} \times \frac{1}{6}$

$\frac{3}{4} \times \frac{1}{6} = \frac{3}{24}$



3 What type of model do you like best? Explain why.

Answers will vary. Possible answer: I like using area models because I can see the number of parts in 1 whole, which helps me to write the product.

Each multiplication problem is used to find the area of a rectangle. Write the missing digits in the boxes to make each multiplication problem true.

1 length: $\frac{1}{2}$ unit
width: $\frac{1}{8}$ unit
$\frac{1}{2} \times \frac{1}{8} = \frac{\boxed{1}}{\boxed{16}}$ square unit

2 length: $\frac{1}{3}$ unit
width: $\frac{1}{4}$ unit
$\frac{1}{3} \times \frac{1}{4} = \frac{\boxed{1}}{\boxed{12}}$ square unit

3 length: $\frac{1}{2}$ unit
width: $\frac{1}{3}$ unit
$\frac{1}{2} \times \frac{1}{3} = \frac{\boxed{1}}{\boxed{6}}$ square unit

4 length: $\frac{1}{2}$ unit
width: $\frac{1}{5}$ unit
$\frac{1}{2} \times \frac{1}{5} = \frac{\boxed{1}}{\boxed{10}}$ square unit

5 length: $\frac{1}{4}$ unit
width: $\frac{1}{4}$ unit
$\frac{1}{4} \times \frac{1}{4} = \frac{\boxed{1}}{\boxed{16}}$

6 length: $\frac{1}{3}$ unit
width: $\frac{1}{8}$ unit
$\frac{1}{3} \times \frac{1}{8} = \frac{\boxed{1}}{\boxed{24}}$

7 length: $\frac{1}{2}$ unit
width: $\frac{1}{7}$ unit
$\frac{1}{2} \times \frac{1}{7} = \frac{\boxed{1}}{\boxed{14}}$

8 length: $\frac{1}{3}$ unit
width: $\frac{1}{10}$ unit
$\frac{1}{3} \times \frac{1}{10} = \frac{\boxed{1}}{\boxed{30}}$ square unit

9 length: $\frac{1}{5}$ unit
width: $\frac{1}{6}$ unit
$\frac{1}{6} \times \frac{1}{5} = \frac{\boxed{1}}{\boxed{30}}$ square unit

10 Write missing digits in the boxes to make two different multiplication problems that are both true. **Answers will vary. Possible answer:**

$\frac{\boxed{1}}{\boxed{5}} \times \frac{1}{4} = \frac{1}{\boxed{20}}$

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

Each multiplication problem is used to find the area of a rectangle. Write each product.

1 length: $\frac{1}{2}$ unit
width: $\frac{1}{3}$ unit
$\frac{1}{2} \times \frac{1}{3}$
$\frac{1}{6}$ square unit

2 length: $\frac{2}{3}$ unit
width: $\frac{1}{2}$ unit
$\frac{2}{3} \times \frac{1}{2}$
$\frac{2}{6}$ square unit

3 length: $\frac{3}{2}$ unit
width: $\frac{2}{3}$ unit
$\frac{3}{2} \times \frac{2}{3}$
$\frac{6}{6}$ square unit

4 length: $\frac{1}{3}$ unit
width: $\frac{1}{4}$ unit
$\frac{1}{3} \times \frac{1}{4}$
$\frac{1}{12}$ square unit

5 length: $\frac{3}{4}$ unit
width: $\frac{1}{3}$ unit
$\frac{3}{4} \times \frac{1}{3}$
$\frac{3}{12}$ square unit

6 length: $\frac{5}{3}$ unit
width: $\frac{3}{4}$ unit
$\frac{5}{3} \times \frac{3}{4}$
$\frac{15}{12}$ square unit

7 length: $\frac{3}{5}$ unit
width: $\frac{1}{2}$ unit
$\frac{3}{5} \times \frac{1}{2}$
$\frac{3}{10}$ square unit

8 length: $\frac{3}{2}$ unit
width: $\frac{3}{5}$ unit
$\frac{3}{2} \times \frac{3}{5}$
$\frac{9}{10}$ square unit

9 length: $\frac{3}{2}$ unit
width: $\frac{6}{5}$ unit
$\frac{3}{2} \times \frac{6}{5}$
$\frac{18}{10}$ square unit

10 Describe how you could modify one tiling diagram to solve problems 1 through 3.

Answers will vary. Possible answer: I could use rectangular tiles that are each $\frac{1}{2}$ unit by $\frac{1}{3}$ unit. The rectangle for problem 1 would be 1 tile. The rectangle for problem 2 would be 1 tile long and 2 tiles wide. The rectangle for problem 3 would be 3 tiles long and 2 tiles wide.