

Facts to Know

You multiply decimals the same way you multiply whole numbers. Also, the decimal points do not have to be lined up. However, you must be careful to correctly place the decimal point in the product for multiplication. The number of decimal places in the answer must equal the total number of places to the right of the decimal point in the problem.

Decimal Points in the Final Answer

Multiplying decimals is the same as multiplying whole numbers. The key is to count the decimal places in each factor.

Sample: $458 \times 7.3 = ?$

Step 1 → Line up the digits.

458

Step 2 → Multiply as with whole numbers.

x 7.3

1374

Step 3 → Count the decimal places in each factor. The product must have an equal number of decimal places as the problem.

+ 32060

3,343.4

Zero as a Place Holder

Remember, the product has the same number of decimal places as the factors. Sometimes you have to add zeros as needed.

21.45

x 0.0321

2145

42900

+ 643500

0.688545

Multiplying Decimals by Whole Numbers

When multiplying decimals by whole numbers, counting off decimal places is the key.

Sample: One inch contains 2.54 centimeters. How many centimeters are there in four inches?

You must multiply the number of centimeters in one inch by four.

Step 1 → Line up the numbers for easy multiplication. You don't need to line up the decimal points, however.

Step 2 → Multiply the numbers as you would multiply whole numbers.

Step 3 → Count the number of decimal places in both numbers that you multiplied. Make sure the decimal places in the product equal the number of decimal places in the problem.

$$\begin{array}{r} 2.54 \quad (2 \text{ decimal places}) \\ \underline{\times 4} \quad (0 \text{ decimal places}) \\ 10.16 \quad (2 \text{ decimal places}) \end{array}$$

So the final answer is 10.16 cm

Facts to Know (*cont.*)**Multiplying Decimals by Decimals**

When multiplying decimals by decimals, counting off decimal places is the key again.

Sample: John can run 4.30 miles in an hour during an ultramarathon. How far does he run in 7.5 hours?

You must multiply the distance John runs in an hour by 7.5.

Step 1 → Line up the numbers for easy multiplication. You don't need to line up the decimal points, however.

Step 2 → Multiply the numbers as you would multiply whole numbers.

Step 3 → Count the number of decimal places in both numbers that you multiplied. Make sure the decimal places in the product equal the number of decimal places in the problem.

$$\begin{array}{r}
 4.30 \quad (2 \text{ decimal places}) \\
 \times 7.5 \quad (1 \text{ decimal place}) \\
 \hline
 2150 \\
 + 30100 \\
 \hline
 32.250 \quad (3 \text{ decimal places})
 \end{array}$$

We can drop the final zero to make the answer easier to read. So the final answer is 32.25 miles.

Multiplying Decimals by 10, 100, and 1000

When you multiply by powers of 10, do the following:

Multiply by 10 → Move the decimal point 1 place to the *right*. → $3.63 \times 10 = 36.3$

Multiply by 100 → Move the decimal point 2 places to the *right*. → $3.63 \times 100 = 363.$

Multiply by 1000 → Move the decimal point 3 places to the *right*. → $3.63 \times 1000 = 3,630.$

Multiplying Money

Amounts of money are multiplied the same way other decimal numbers are multiplied. The number of decimal places in the answer must equal the number of decimal places in the problem.

Sample

$$\begin{array}{r}
 \$155.73 \quad (2 \text{ decimal places}) \\
 \times 31 \\
 \hline
 \$4,827.63 \quad (2 \text{ decimal places})
 \end{array}$$

Directions: Multiply the decimals by whole numbers.

1. $9 \times .3 =$ _____

6. $.75 \times 8 =$ _____

2. $4 \times .035 =$ _____

7. $50.3 \times 3 =$ _____

3. $482 \times .009 =$ _____

8. $2.125 \times 5 =$ _____

4. $45.63 \times 40 =$ _____

9. $.814 \times 2 =$ _____

5. $634 \times 6.5 =$ _____

10. $15.94 \times 2 =$ _____

Directions: Multiply the decimals by decimals.

11. $.08 \times .7 =$ _____

16. $4.26 \times .508 =$ _____

12. $.234 \times .03 =$ _____

17. $1.23 \times 45.6 =$ _____

13. $.14 \times .6 =$ _____

18. $29.7 \times 1.64 =$ _____

14. $73.6 \times 8.14 =$ _____

19. $19.04 \times .4 =$ _____

15. $43.65 \times 3.7 =$ _____

20. $.802 \times .23 =$ _____

Directions: Multiply the decimals by 10, 100, and 1000.

21. $.180 \times 10 =$ _____

26. $.00922 \times 100 =$ _____

22. $.53 \times 100 =$ _____

27. $52.475 \times 10 =$ _____

23. $.145 \times 1000 =$ _____

28. $893.155 \times 1000 =$ _____

24. $.00091 \times 100 =$ _____

29. $.00023 \times 1000 =$ _____

25. $11.234 \times 10 =$ _____

30. $167.945 \times 10 =$ _____

Keys to Multiplying Decimals

- Line up the numbers. You don't need to line up the decimal points, however.
- Multiply the numbers as you would multiply whole numbers.
- Count the number of decimal places in both numbers that are being multiplied. Make sure the decimal places in the product equal the number of decimal places in the problem.

Directions: Multiply to solve each problem.

$$\begin{array}{r} 1. \quad \$46.98 \\ \times \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \$45.03 \\ \times \quad 13 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad \$10.50 \\ \times \quad 0.60 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \$1.49 \\ \times \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \$17.10 \\ \times \quad 15 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 47.8 \\ \times \quad 0.1 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad \$21.06 \\ \times \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 0.84 \\ \times \quad 3.15 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 14.2 \\ \times \quad 9.7 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad \$9.99 \\ \times \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 2.08 \\ \times \quad 0.9 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad \$5.75 \\ \times \quad 0.24 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad \$1.57 \\ \times \quad 34 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 0.28 \\ \times \quad 9.51 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad \$5.58 \\ \times \quad 1.5 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \$105.13 \\ \times \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 0.0076 \\ \times \quad 0.30 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 0.14 \\ \times \quad 0.87 \\ \hline \end{array}$$

20. 0.15; 0.51; 5.01;
50.1

21. 4

22. 27

23. 21

24. 5.6

25. 0.2

26. 7.6

27. 18.7

28. 304.81

29. 1.06

30. 27.39

31. 356.14

32. \$13.02

33. \$163.76

34. 4,567.83

Page 27

1. 2.7

2. .14

3. 4.338

4. 1825.2

5. 4121

6. 6

7. 150.9

8. 10.625

9. 1.628

10. 31.88

11. .056

12. .00702

13. .084

14. 599.104

15. 161.505

16. 2.16408

17. 56.088

18. 48.708

19. 7.616

20. .18446

21. 1.8

22. 53

23. 145

24. .091

25. 112.34

26. .922

27. 524.75

28. 893,155

29. 0.23

30. 1679.45

Page 28

1. \$93.96

2. \$4.47

3. \$105.30

4. \$69.93

5. \$53.38

6. \$420.52

7. \$585.39

8. \$256.50

9. 2.646

10. 1.872

11. 2.6628

12. 0.00228

13. \$6.30

14. 4.78

15. 137.74

16. \$1.38

17. \$8.37

18. .1218

Page 32

1. 5

2. 0.139

3. 10.80

4. 625

5. 0.013

6. 0.04

7. 0.03

8. 750

9. 175

10. \$81.25

11. 5.7

12. .043

13. 4.9

14. 80

15. 50

16. 7/20

17. 8/125

18. 3 2/5

19. 3 1/8

20. 18 1/3

21. 4 5/8

22. 21/2500

23. 66 3/4

24. 159/500

25. 1/16

26. 4 1/4

27. 1 1/10

28. .8

29. .37 1/2 or .375

30. .66 2/3

31. .77 7/9

32. .83 1/3

33. .62 1/2 or .625

34. .33 1/3

35. .7

Page 36

1. 7%

2. 75%

3. 3.5%

4. 33 1/3%

5. 90%

6. 150%

7. .4%

8. 65%

9. 10%

10. 66 2/3%

11. .09

12. .35

13. .048

14. .22 2/9

15. .6

16. 1.25

17. .003

18. .95

19. .2

20. .33 1/3

21. 3/4

22. 2/5

23. 1/20

24. 4/5

25. 3/50

26. 9/100

27. 2/25

28. 1/5

29. 7/20

30. 43/50

31. 37.5%

32. 33 1/3%

33. 40%

34. 87.5%

35. 66 2/3%

36. 20%

37. 50%

38. 12.5%

39. 5%

40. 25%

41. 5%

42. 600%

43. 20%

44. 16 2/3%

45. 25%

46. 80

47. 90

48. 63.6

49. 130

50. 85.71

Page 39

1. \$45.00

2. \$45.42

3. \$10.00

4. \$30.00

5. \$135.00

6. \$73.75

7. \$19.90

8. \$9.12

9. \$298

10. \$54.08

Page 40

1. \$42.29

2. \$196

3. \$16.20

4. \$0.25

5. \$1372.70

Chart1. $\frac{1}{10}$, .10, 10%2. $\frac{1}{4}$, .25, 25%3. $\frac{9}{20}$, .45, 45%4. $\frac{3}{20}$, .15, 15%5. $\frac{4}{5}$, .80, 80%6. $\frac{5}{6}$, .833, 83.3%7. $\frac{77}{100}$, .77, 77%8. $\frac{1}{20}$, .20, 20%9. $\frac{11}{50}$, .222, 22%10. $\frac{2}{5}$, .40, 40%**Pages 41 and 42**

1. 24 pieces of pie

2. 1/4 yard

3. 4 miles

4. 1 1/8 miles

5. 2 1/2 pieces of taffy

6. 3 weeks

7. 75 ounces

8. 66 1/4 inches

9. \$287.65

10. \$21.79

11. \$114.26

12. \$81.16

13. \$300; \$90; \$210

14. \$26.45

15. 25 students

16. 150 children

17. 20 homes

18. 225 cards

19. \$0.87

20. \$1.50

21. 26 minutes

22. 288 boxes

23. 6 pounds

24. 6.25%

Pages 43 and 44

1. \$500 every six months. Take a salary of \$10,000 for Sample:

1st year: \$5,000 + \$5,500 = \$10,500 vs. \$10,000

2nd year: \$6,000 + \$6,500 = \$12,500 vs. \$12,000

2. about 18,000 miles

3. house numbers

4. \$0.20

5. 100%

6. Choco-Chunk and Nuts to U are equal in value. Goodie Two-Shoes is the better buy.

7. 200 miles a day

8. \$4,250.00

9. \$1.25 to break even; \$4.38 to make \$25,000.

10. a. \$14.00

b. \$42.00

c. \$52.50

d. \$87.50

e. \$49.00

f. \$105.00

Yes, he saved \$350.00

11. b

12. a

13. a

14. a

15. After 31 years, the system will still be worth \$10!

16. 52 bushels of wheat, 55 bushels of corn, and 34 bushels of oats.