Autumn Decimals

Learn and practice: multiply and divide by 10, 100 and 1000 (Grades 5–6)

1. Learn: multiplying by 10, 100 and 1000

Take the number 4.56. It has 3 digits: 4, 5, 6. When we multiply by 10, 100 or 1000, the digits stay the same — only the decimal point moves. The number of hops is the number of zeros.

4.56 × 10

10 has 1 zero → 1 hop right

4 5 6 → = 45.6

4.56 × 100

100 has 2 zeros → 2 hops right

4 5 6 → = 456

4.56 × 1000

1000 has 3 zeros → 3 hops right

4 5 6 0 → = 4560

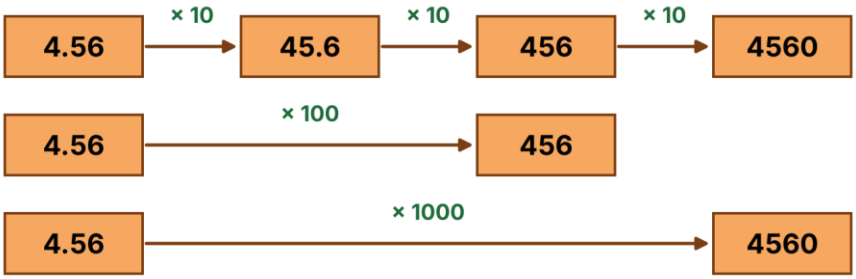
no digit left? write 0 to fill the place

Multiply → the number gets BIGGER → the point hops RIGHT.

Count the zeros: 10 → 1 hop, 100 → 2 hops, 1000 → 3 hops. If the point has no digit to hop over, write a 0 there.

Check: 4.56 × 100 = 456. Is 456 bigger than 4.56? Yes ✓

Why 2 hops for 100? Because 100 = 10 × 10. Multiplying by 100 is the same as multiplying by 10, and then by 10 again. Each × 10 is one hop, so × 100 is two hops and × 1000 is three hops.



Try it. Fill in the table. Say to yourself: how many zeros, which way?

Number	× 10	× 100	× 1000
3.52	35.2		
0.7		70	
12.08			
0.045			

2. Learn: dividing by 10, 100 and 1000

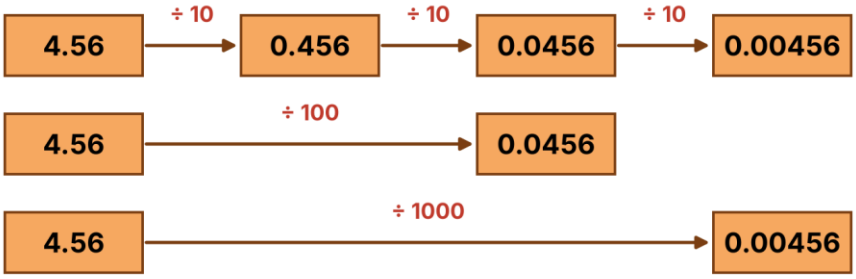
Same number, 4.56. Dividing is the opposite of multiplying: the digits 4, 5, 6 stay the same, and the point hops the other way — to the LEFT. When the point runs out of digits, write zeros in front.

4.56 ÷ 10
10 has 1 zero → 1 hop left
0 4 5 6
= 0.456
write 0 in front of the point

4.56 ÷ 100
100 has 2 zeros → 2 hops left
0 0 4 5 6
= 0.0456
write zeros to fill the empty places

4.56 ÷ 1000
1000 has 3 zeros → 3 hops left
0 0 0 4 5 6
= 0.00456

Why 2 hops for 100? Same idea: dividing by 100 is dividing by 10, and then by 10 again. Each ÷ 10 is one hop to the left, so ÷ 100 is two hops and ÷ 1000 is three hops.



Divide → the number gets SMALLER → the point hops LEFT.

Count the zeros: 10 → 1 hop, 100 → 2 hops, 1000 → 3 hops. Always write a 0 before the point: 0.456, not .456

Whole numbers: the point is hiding at the end. 73 is 73. → 73 ÷ 10 = 7.3 and 73 ÷ 100 = 0.73 and 73 ÷ 1000 = 0.073

Check: 4.56 ÷ 10 = 0.456. Is 0.456 smaller than 4.56? Yes ✓

Try it. Fill in the table. How many zeros, which way?

Number	÷ 10	÷ 100	÷ 1000
840	84		
6		0.06	
35.2			
1700			

3. Practice: multiplying

1. 4.6 × 10 = _____ **2.** 0.83 × 100 = _____ **3.** 2.75 × 1000 = _____

4. 0.09 × 10 = _____ **5.** 5.2 × 100 = _____ **6.** 0.04 × 1000 = _____

7. 61.3 × 10 = _____ **8.** 0.5 × 1000 = _____ **9.** 7.08 × 100 = _____

10. 12.49 × 10 = **11.** 0.37 × 100 = _____ **12.** 3.6 × 1000 = _____

13. 0.025 × 100 = **14.** 9.9 × 10 = _____ **15.** 0.106 × 10 = _____

4. Practice: dividing

1. 47 ÷ 10 = _____ **2.** 630 ÷ 100 = _____ **3.** 8 ÷ 10 = _____

4. 5 ÷ 100 = _____ **5.** 2500 ÷ 1000 = **6.** 72 ÷ 1000 = _____

7. 3.6 ÷ 10 = _____ **8.** 45.2 ÷ 100 = _____ **9.** 0.8 ÷ 10 = _____

10. 912 ÷ 1000 = **11.** 15.7 ÷ 1000 = **12.** 6.04 ÷ 10 = _____

13. 340 ÷ 1000 = **14.** 0.5 ÷ 100 = _____ **15.** 700 ÷ 100 = _____

5. Place the decimal point

The digits of the answer are already written. Put the decimal point in the right place. (If the answer is a whole number, the point goes at the end.)

1. 37.56 × 10 = **3 7 5 6** **2.** 8.409 × 100 = **8 4 0 9**

3. 0.0725 × 1000 = **7 2 5** **4.** 2.5 × 1000 = **2 5 0 0**

5. 60.3 × 100 = **6 0 3 0** **6.** 0.916 × 10 = **9 1 6**

7. 48.2 ÷ 10 = **4 8 2** **8.** 375 ÷ 100 = **3 7 5**

9. 6.4 ÷ 1000 = **0 0 0 6 4** **10.** 905 ÷ 1000 = **0 9 0 5**

11. 0.7 ÷ 10 = **0 0 7** **12.** 2530 ÷ 100 = **2 5 3 0**

6. Harvest word problems

Decide: multiply or divide? Write the calculation and the answer with its unit.

1. A bag of 100 pumpkin seeds weighs 15 g. How much does one seed weigh?

Answer: _____

2. One dry maple leaf weighs about 0.3 g. How much do 1000 leaves weigh?

Answer: _____

3. At the farm stand, 10 apples cost $6.50. How much does one apple cost?

Answer: _____

4. A pumpkin weighs 4.75 kg. How much do 100 pumpkins of this size weigh together?

Answer: _____

5. A squirrel's 1000 acorns weigh 3200 g together. How much does one acorn weigh?

Answer: _____

6. Ten hay bales weigh 254 kg. How much does one bale weigh?

Answer: _____

7. Crack the autumn code

Work out each answer. Find it in the code table and write its letter in the box. Careful: the table also has wrong answers that you get if the point hops the wrong way or the wrong number of times!

1. 0.46 × 100 = _____ **2.** 3.7 ÷ 10 = _____ **3.** 0.08 × 1000 = _____

4. 125 ÷ 1000 = _____ **5.** 5.9 × 10 = _____ **6.** 4.5 ÷ 100 = _____

7. 0.21 × 1000 =

0.037	0.045	0.125	0.37	0.45	0.59	1.25	4.6	8	21	46	59	80	210
N	S	V	A	K	P	G	D	L	M	H	E	R	T

Answer Key (for the teacher)

1. Tables: 3.52 → 35.2, 352, 3520. 0.7 → 7, 70, 700. 12.08 → 120.8, 1208, 12 080. 0.045 → 0.45, 4.5, 45.

2. 1. 46 2. 83 3. 2750 4. 0.9 5. 520 6. 4 7. 613 8. 500 9. 708 10. 124.9 11. 370 12. 360 13. 2.5 14. 99 15. 106

Division table: 840 → 84, 8.4, 0.84. 6 → 0.6, 0.06, 0.006. 35.2 → 3.52, 0.352, 0.0352. 1700 → 170, 17, 1.7.

3. 1. 46 2. 83 3. 2750 4. 0.9 5. 520 6. 40 7. 613 8. 500 9. 780 10. 124.9 11. 37 12. 3600 13. 2.5 14. 99 15. 1.06

4. 1. 4.7 2. 6.3 3. 0.8 4. 0.05 5. 2.5 6. 0.072 7. 0.36 8. 0.452 9. 0.08 10. 0.912 11. 0.0157 12. 0.604 13. 0.34 14. 0.005 15. 7

5. 1. 375.6 2. 840.9 3. 72.5 4. 2500 (point at the end) 5. 6030 (point at the end) 6. 9.16 7. 4.82 8. 3.75 9. 0.0064 10. 0.905 11. 0.07 12. 25.30 = 25.3

6. 1. 15 ÷ 100 = 0.15 g 2. 0.3 × 1000 = 300 g 3. 6.50 ÷ 10 = $0.65 4. 4.75 × 100 = 475 kg 5. 3200 ÷ 1000 = 3.2 g 6. 254 ÷ 10 = 25.4 kg

7. 0.46 × 100 = 46 3.7 ÷ 10 = 0.37 0.08 × 1000 = 80 125 ÷ 1000 = 0.125 5.9 × 10 = 59 4.5 ÷ 100 = 0.045 0.21 × 1000 = 210 → HARVEST. Decoys (0.037, 0.45, 0.59, 1.25, 4.6, 8, 21) are the answers with the point hopped the wrong way or one hop too few/many.