Grade 5 Unit 1 worksheet: Dividing a decimal by ten, one hundred or one thousand (answer key)

ANSWERS AT A GLANCE

1. (a) 563 (b) 9.42 (c) 7.08 (d) 0.264 (e) 4.005 (f) 0.005

2. (a) 5.27 (b) 19.4 (c) 0.386 (d) 0.705 (e) 0.013 (f) 2

3. (a) 40.5 (b) 36 (c) 517 (d) 8.4 (e) 2,600 (f) 0.9

4. 0.239 grams

5. (a) $=$ (b) $>$ (c) $<$

6. (a) 0.024 cm (b) 0.06 cm (c) One sheet of poster board is thicker.

7. (a) For example, 250 ÷ 1,000 = 0.25. (b) For example, 5,000 ÷ 1,000 = 5. (c) The whole numbers less than 1,000.

WORKED SOLUTIONS

1. Divide. Move every digit to the right, and fill empty places with zeros.

(a) 5,630 ÷ 10 (b) 94.2 ÷ 10 (c) 708 ÷ 100

(d) 26.4 ÷ 100 (e) 4,005 ÷ 1,000 (f) 0.5 ÷ 100

ANSWER

(a) 563 (b) 9.42 (c) 7.08 (d) 0.264 (e) 4.005 (f) 0.005

SOLUTION

(a) Every digit moves one place right: 5 thousands become 5 hundreds, 6 hundreds become 6 tens, 3 tens become 3 ones, and the 0 ones become 0 tenths. 5,630 ÷ 10 = 563.0 = 563.

(b) The 9 tens become 9 ones, the 4 ones become 4 tenths, the 2 tenths become 2 hundredths. 94.2 ÷ 10 = 9.42.

(c) The 7 hundreds become 7 ones, the 0 tens become 0 tenths, the 8 ones become 8 hundredths. The zero still holds its place: 708 ÷ 100 = 7.08.

(d) The 2 tens move to the tenths, the 6 ones to the hundredths, the 4 tenths to the thousandths. The ones place is empty, so write 0 there: 26.4 ÷ 100 = 0.264.

(e) Every digit moves three places right. The 4 thousands become 4 ones and the 5 ones become 5 thousandths, with the two zeros between them: 4,005 ÷ 1,000 = 4.005.

(f) The 5 tenths move two places, to the thousandths. The tenths and hundredths are empty: 0.5 ÷ 100 = 0.005.

2. Divide. The exponent tells how many places each digit moves.

(a) $52.7 \div 10^1$ (b) $1{,}940 \div 10^2$ (c) $386 \div 10^3$

(d) $70.5 \div 10^2$ (e) $13 \div 10^3$ (f) $2{,}000 \div 10^3$

ANSWER

(a) 5.27 (b) 19.4 (c) 0.386 (d) 0.705 (e) 0.013 (f) 2

SOLUTION

(a) $10^1 = 10$, so every digit moves one place right: 52.7 ÷ 10 = 5.27.

(b) $10^2 = 100$, so every digit moves two places right: 1,940 ÷ 100 = 19.40 = 19.4.

(c) $10^3 = 1{,}000$, three places: the 3 hundreds become 3 tenths. 386 ÷ 1,000 = 0.386.

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(d) Two places: the 7 tens become 7 tenths, the 0 ones become 0 hundredths, the 5 tenths become 5 thousandths. 70.5 ÷ 100 = 0.705.

(e) Three places: the 1 ten goes to the hundredths and the 3 ones go to the thousandths. The tenths place is empty: 13 ÷ 1,000 = 0.013.

(f) Three places: the 2 thousands become 2 ones, and the zeros land after the point: 2,000 ÷ 1,000 = 2.000 = 2.

3. Each blank is the number that was divided. Fill in each blank. Then check by dividing.

(a) $\square \div 10 = 4.05$

(b) $\square \div 100 = 0.36$

(c) $\square \div 1{,}000 = 0.517$

(d) $\square \div 100 = 0.084$

(e) $\square \div 10^3 = 2.6$

(f) $\square \div 10 = 0.09$

ANSWER

(a) 40.5 (b) 36 (c) 517 (d) 8.4 (e) 2,600 (f) 0.9

SOLUTION

Dividing moved every digit to the right, so move the digits back to the left the same number of places.

(a) One place back: the 4 ones become 4 tens and the 5 hundredths become 5 tenths. The number is 40.5. Check: 40.5 ÷ 10 = 4.05.

(b) Two places back: the 3 tenths become 3 tens. The number is 36. Check: 36 ÷ 100 = 0.36.

(c) Three places back: the 5 tenths become 5 hundreds. The number is 517. Check: 517 ÷ 1,000 = 0.517.

(d) Two places back: the 8 hundredths become 8 ones and the 4 thousandths become 4 tenths. The number is 8.4. Check: 8.4 ÷ 100 = 0.084.

(e) $10^3 = 1{,}000$, so three places back: the 2 ones become 2 thousands and the 6 tenths become 6 hundreds. The tens and ones are empty and get zeros. The number is 2,600. Check: 2,600 ÷ 1,000 = 2.6.

(f) One place back: the 9 hundredths become 9 tenths. The number is 0.9. Check: 0.9 ÷ 10 = 0.09.

4. A jar holds 1,000 glass beads that all weigh the same. Together the beads weigh 239 grams. How much does one bead weigh?

ANSWER

0.239 grams

SOLUTION

One bead is an equal share of the total, so divide by the number of beads: 239 ÷ 1,000.

Every digit moves three places to the right. The hundreds digit lands in the tenths place, the tens digit in the hundredths and the ones digit in the thousandths. The ones place is empty, so write 0

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there:

$$239 \div 1{,}000 = 0.239$$

One bead weighs 0.239 grams. Check: 1,000 beads of 0.239 grams make 239 grams.

5. Write $<$, $>$ or $=$ in each blank. Work out both sides first.

(a) $4.5 \div 10$ ☐ $450 \div 1{,}000$

(b) $72 \div 100$ ☐ $7.2 \div 100$

(c) $6 \div 1{,}000$ ☐ $0.6 \div 10$

ANSWER

(a) $=$ (b) $>$ (c) $<$

SOLUTION

(a) 4.5 ÷ 10 = 0.45 and 450 ÷ 1,000 = 0.450 = 0.45. They are equal: 0.45 = 0.45.

(b) 72 ÷ 100 = 0.72 and 7.2 ÷ 100 = 0.072. Compare the tenths: 7 tenths is more than 0 tenths, so 0.72 > 0.072.

(c) 6 ÷ 1,000 = 0.006 and 0.6 ÷ 10 = 0.06. Compare the hundredths: 0 hundredths is less than 6 hundredths, so 0.006 < 0.06.

6. In art class, Maya measures two stacks. A stack of 100 index cards is 2.4 cm tall. A stack of 10 sheets of poster board is 0.6 cm tall.

(a) How thick is one index card?

(b) How thick is one sheet of poster board?

(c) Which is thicker, one index card or one sheet of poster board?

ANSWER

(a) 0.024 cm (b) 0.06 cm (c) One sheet of poster board is thicker.

SOLUTION

(a) The 100 cards share the height equally: 2.4 ÷ 100. The 2 ones move to the hundredths and the 4 tenths move to the thousandths, with a 0 in the empty tenths place. One card is 0.024 cm thick.

(b) 0.6 ÷ 10: the 6 tenths move one place, to the hundredths. One sheet is 0.06 cm thick.

(c) Compare 0.024 and 0.06. In the hundredths place, 2 is less than 6, so 0.024 < 0.06. One sheet of poster board is thicker.

7. Zoe says, "When you divide a whole number by 1,000, the answer is always less than 1."

(a) Give a whole number that makes Zoe right, and divide it by 1,000.

(b) Give a whole number that makes Zoe wrong, and divide it by 1,000.

(c) Which whole numbers give an answer less than 1? Explain.

ANSWER

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(a) For example, 250 ÷ 1,000 = 0.25. (b) For example, 5,000 ÷ 1,000 = 5. (c) The whole numbers less than 1,000.

SOLUTION

(a) Any whole number less than 1,000 works. For example, 250 ÷ 1,000 = 0.250 = 0.25, which is less than 1.

(b) Any whole number of 1,000 or more works. For example, 5,000 ÷ 1,000 = 5: the 5 thousands move three places to the ones, and 5 is not less than 1.

(c) Dividing by 1,000 moves every digit three places right, so the thousands digit lands in the ones place. A number less than 1,000 has no thousands digit, so nothing lands in the ones place or to the left of it, and the answer is less than 1. A number of 1,000 or more has a thousands digit (or more), so the answer is 1 or more. Zoe is right only for whole numbers less than 1,000.

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