

Name _____

Date _____

4.1 Ordering decimals — worked answers

Compare and order decimal numbers. · 56 questions

A · Fluency — Order sets of decimals and compare pairs.

- 1 Write these in order of size, smallest first: **6.8, 4.23, 7.811, 0.77**
Answer: 0.77, 4.23, 6.8, 7.811
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 0.77, 4.23, 6.8, 7.811.
- 2 Write these in order of size, smallest first: **4.66, 4.6, 4.08**
Answer: 4.08, 4.6, 4.66
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 4.08, 4.6, 4.66.
- 3 Write these in order of size, smallest first: **8.9, 14.639, 6.45**
Answer: 6.45, 8.9, 14.639
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 6.45, 8.9, 14.639.
- 4 Write these in order of size, smallest first: **2.82, 2.6, 2.816**
Answer: 2.6, 2.816, 2.82
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 2.6, 2.816, 2.82.
- 5 Write these in order of size, smallest first: **0.5, 0.45, 0.54**
Answer: 0.45, 0.5, 0.54
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 0.45, 0.5, 0.54.
- 6 Write these in order of size, smallest first: **3.07, 3.7, 3.007**
Answer: 3.007, 3.07, 3.7
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 3.007, 3.07, 3.7.
- 7 Write these in order of size, smallest first: **12.3, 12.03, 12.33**
Answer: 12.03, 12.3, 12.33
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 12.03, 12.3, 12.33.
- 8 Write these in order of size, smallest first: **9.1, 9.09, 9.11**
Answer: 9.09, 9.1, 9.11
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 9.09, 9.1, 9.11.
- 9 Write these in order of size, smallest first: **0.089, 0.9, 0.09**
Answer: 0.089, 0.09, 0.9
Compare the whole-number parts first, then the tenths, then the hundredths. In order: 0.089, 0.09, 0.9.

- 10** Write these in order of size, smallest first: **5.5, 5.05, 5.55, 5.505**

Answer: 5.05, 5.5, 5.505, 5.55

Compare the whole-number parts first, then the tenths, then the hundredths. In order: 5.05, 5.5, 5.505, 5.55.

- 11** Write these in order of size, smallest first: **1.4, 1.44, 1.404**

Answer: 1.4, 1.404, 1.44

Compare the whole-number parts first, then the tenths, then the hundredths. In order: 1.4, 1.404, 1.44.

- 12** Write these in order of size, smallest first: **20.2, 2.02, 22.0**

Answer: 2.02, 20.2, 22.0

Compare the whole-number parts first, then the tenths, then the hundredths. In order: 2.02, 20.2, 22.0.

- 13** Write these in order of size, **largest** first: **6.8, 4.23, 7.811, 0.77**

Answer: 7.811, 6.8, 4.23, 0.77

Same method, then reverse the list: 7.811, 6.8, 4.23, 0.77.

- 14** Write these in order of size, **largest** first: **4.66, 4.6, 4.08**

Answer: 4.66, 4.6, 4.08

Same method, then reverse the list: 4.66, 4.6, 4.08.

- 15** Write these in order of size, **largest** first: **8.9, 14.639, 6.45**

Answer: 14.639, 8.9, 6.45

Same method, then reverse the list: 14.639, 8.9, 6.45.

- 16** Write these in order of size, **largest** first: **2.82, 2.6, 2.816**

Answer: 2.82, 2.816, 2.6

Same method, then reverse the list: 2.82, 2.816, 2.6.

- 17** Write these in order of size, **largest** first: **0.5, 0.45, 0.54**

Answer: 0.54, 0.5, 0.45

Same method, then reverse the list: 0.54, 0.5, 0.45.

- 18** Write these in order of size, **largest** first: **3.07, 3.7, 3.007**

Answer: 3.7, 3.07, 3.007

Same method, then reverse the list: 3.7, 3.07, 3.007.

- 19** Which is bigger, **4.6** or **4.66**?

☐ 4.6

☐ 4.66

Answer: 4.66

Line up the place values. 4.66 is the larger number.

- 20** Which is bigger, **2.816** or **2.82**?

☐ 2.816

☐ 2.82

Answer: 2.82

Line up the place values. 2.82 is the larger number.

- 21** Which is bigger, **0.9** or **0.45**?

☐ 0.9

☐ 0.45

Answer: 0.9

Line up the place values. 0.9 is the larger number.

- 22** Which is bigger, **3.07** or **3.7**?

- ☐ 3.07
☐ 3.7

Answer: 3.7

Line up the place values. 3.7 is the larger number.

- 23** Which is bigger, **12.03** or **12.3**?

- ☐ 12.03
☐ 12.3

Answer: 12.3

Line up the place values. 12.3 is the larger number.

- 24** Which is bigger, **9.11** or **9.09**?

- ☐ 9.11
☐ 9.09

Answer: 9.11

Line up the place values. 9.11 is the larger number.

B · Reasoning — Place value, zeros and the digit-count trap.

- 25** When comparing decimals, what do you look at first?

- ☐ The last digit
☐ The whole-number part
☐ The number of digits
☐ The tenths

Answer: The whole-number part

Only if the whole-number parts are equal do you move on to the tenths.

- 26** Two decimals have the same whole-number part. What do you compare next?

- ☐ The hundredths
☐ The tenths
☐ The number of digits
☐ The last digit

Answer: The tenths

Work along the places from the left: tenths, then hundredths, then thousandths.

- 27** Is 2.816 smaller than 2.82?

- ☐ Yes
☐ No

Answer: Yes

Both have 2 units and 8 tenths. Compare hundredths: 1 is less than 2, so $2.816 < 2.82$.

- 28** Is a decimal with more digits always bigger?

- ☐ Yes
☐ No

Answer: No

2.816 has more digits than 2.82 but is smaller. Place value decides, not the number of digits.

29 Which of these is a good way to compare 4.6 and 4.66?

- ☐ Count the digits
- ☐ Write 4.6 as 4.60 and compare place by place
- ☐ Add them together
- ☐ Round them both

Answer: Write 4.6 as 4.60 and compare place by place

Filling with zeros lines the columns up: $4.60 < 4.66$.

30 Write 0.5 with two decimal places.

Answer: 0.50

Adding a zero at the end does not change the value: $0.5 = 0.50$.

31 Write a decimal that lies between 3.4 and 3.5.

Answer: 3.45

Any number such as 3.45, 3.41 or 3.499 works. There are infinitely many.

32 Write a decimal that lies between 2.81 and 2.82.

Answer: 2.815

Use another decimal place: 2.815 lies between them.

33 Which symbol makes this true: $6.45 \square 8.9$?

- ☐ $<$
- ☐ $>$
- ☐ $=$

Answer: $<$

6 units is less than 8 units, so $6.45 < 8.9$.

34 Which symbol makes this true: $14.639 \square 8.9$?

- ☐ $<$
- ☐ $>$
- ☐ $=$

Answer: $>$

14 units is more than 8 units, so $14.639 > 8.9$.

35 Which digit is in the hundredths place in 5.276?

Answer: 7

The places after the point are tenths (2), hundredths (7), thousandths (6).

36 Which digit is in the tenths place in 0.089?

Answer: 0

0.089 has 0 tenths, 8 hundredths and 9 thousandths.

C · Challenge — Numbers between numbers, and mixed units.

37 Put in order, smallest first: 0.7, 0.07, 0.707, 0.077

Answer: 0.07, 0.077, 0.7, 0.707

Write them all to three decimal places: 0.700, 0.070, 0.707, 0.077. Now the order is clear.

38 Put in order, smallest first: 1.1, 1.01, 1.101, 1.011

Answer: 1.01, 1.011, 1.1, 1.101

To three decimal places: 1.100, 1.010, 1.101, 1.011.

- 39** How many decimals with 2 decimal places lie between 3.4 and 3.5, not including the ends?

Answer: 9

They are 3.41, 3.42, ..., 3.49 — nine of them.

- 40** What is the largest decimal with 2 decimal places that is smaller than 7.8?

Answer: 7.79

7.79 is just below 7.80.

- 41** What is the smallest decimal with 3 decimal places that is bigger than 2.45?

Answer: 2.451

2.451 is just above 2.450.

- 42** Sofia says 0.4 is bigger than 0.35 because 4 is bigger than 35 is wrong — what is the correct reason 0.4 is bigger?

- ☐ 0.4 has fewer digits
- ☐ 4 tenths is more than 3 tenths
- ☐ 0.4 is a whole number
- ☐ They are equal

Answer: 4 tenths is more than 3 tenths

Compare the tenths first: 4 tenths beats 3 tenths, whatever follows.

- 43** Order these masses, smallest first: 0.5 kg, 450 g, 0.45 kg. Give them in kg, separated by commas.

Answer: 0.45, 0.45, 0.5

450 g = 0.45 kg, so two of them are equal: 0.45 kg, 0.45 kg, 0.5 kg. Always convert to the same unit before comparing.

- 44** A number lies between 5.6 and 5.7 and has 2 decimal places. How many possible numbers are there?

Answer: 9

5.61 up to 5.69 — nine numbers.

D · Word problems — Times, masses, prices and lengths.

- 45** Four runners record 12.4 s, 12.04 s, 12.44 s and 12.14 s. Write the times in order, fastest first.

Answer: 12.04, 12.14, 12.4, 12.44

Fastest means smallest: $12.04 < 12.14 < 12.4 < 12.44$.

- 46** Three parcels weigh 2.5 kg, 2.05 kg and 2.55 kg. What is the mass of the heaviest, in kg?

Answer: 2.55

2.55 has the most hundredths.

- 47** Three parcels weigh 2.5 kg, 2.05 kg and 2.55 kg. What is the mass of the lightest, in kg?

Answer: 2.05

2.05 has only 0 tenths.

- 48** Four shops sell the same pen for \$1.20, \$1.02, \$1.22 and \$1.2. Order the prices from cheapest, separated by commas.

Answer: 1.02, 1.2, 1.2, 1.22

\$1.20 and \$1.2 are the same price. Cheapest first: 1.02, 1.2, 1.2, 1.22.

- 49** A high-jumper clears 1.65 m, 1.7 m and 1.68 m. What is her best jump, in metres?

Answer: 1.7

1.7 = 1.70, which beats 1.68 and 1.65.

- 50** Rainfall was 0.8 mm, 0.08 mm and 0.88 mm on three days. What was the wettest day's rainfall, in mm?

Answer: 0.88

0.88 has 8 tenths and 8 hundredths.

- 51** A shop labels two bags 0.5 kg and 0.50 kg. Are they the same?

☐ Yes

☐ No

Answer: Yes

A zero on the end of a decimal does not change its value.

- 52** Which is longer, a 2.35 m plank or a 2.4 m plank? Give the length in metres.

Answer: 2.4

2.4 = 2.40, and 40 hundredths beats 35 hundredths.

- 53** A thermometer reads 36.8 °C, 36.08 °C and 36.88 °C on three days. What was the highest reading, in °C?

Answer: 36.88

36.88 has the most hundredths of the three with 36 units.

- 54** Petrol costs \$1.459 or \$1.46 per litre at two stations. Which is cheaper? Give the price.

Answer: 1.459

1.459 < 1.460, so it is very slightly cheaper.

- 55** Order these lengths, shortest first: 0.9 m, 90 cm, 0.09 m. Give them in metres, separated by commas.

Answer: 0.09, 0.9, 0.9

90 cm = 0.9 m, so two are equal: 0.09 m, 0.9 m, 0.9 m.

- 56** Three athletes throw 14.639 m, 8.9 m and 6.45 m. What is the winning distance, in metres?

Answer: 14.639

14 units beats 8 and 6.