

12. [Number / Place Value]

Skill 12.1 Understanding and finding place value of a digit in a number (1).

MM5 1 1 2 3 3 4 4
MM6 1 2 3 3 4 4

When writing numbers the following is true:

Each digit in a number occupies a special place or column.

Larger numbers have their largest digits first (ordered from left to right).

Smaller numbers have their smallest digits first (ordered from left to right).

Even numbers have as their last digits either 0, 2, 4, 6 or 8.

Odd numbers have as their last digits either 1, 3, 5, 7 or 9.

Place or column	thousands	hundreds	tens	units	tenths	hundredths	thousandths
	1	0	2	5	7	6	3

Q. What is the largest odd, 4 digit number, that contains the digits 0, 4, 5 and 7?

A. 7405

To make the largest odd number, move the smallest odd digit to last place. Both 5 and 7 are odd but 5 is smallest, so 5 goes last.

Order the remaining digits 0, 4 and 7 from largest to smallest:
 $\Rightarrow 740$

Q. In the number 5893 which of the digits 5, 8, 9 or 3 lies in the hundreds column?

A. 8

The digit three places to the left of the decimal point is in the hundreds place. So 8 is in the hundreds column.

a) What is the smallest even, 3 digit number that contains the digits 5, 6 and 7?

576

b) What is the smallest odd, 3 digit number that contains the digits 2, 6 and 9?

c) What is the smallest even, 4 digit number that contains the digits 1, 3, 6 and 7?

d) What is the largest odd, 4 digit number that contains the digits 0, 1, 8 and 9?

e) In the number 5491 which of the digits 5, 4, 9 or 1 lies in the tens column?

f) In the number 15.26 which of the digits 1, 5, 2 or 6 lies in the hundredths column?

g) In the number 2006 which of the digits 2, 0 or 6 lies in the thousands column?

h) In the number 564.2 which of the digits 5, 4, 6 or 2 lies in the units column?

Compare the position of the digit to that of the decimal point.

Hint: There is a decimal point which is not written, at the end of any whole number.

Place or column	thousands	hundreds	tens	units	tenths	hundredths	thousandths
Place value	2000	600	70	5	$\frac{8}{10}$	$\frac{3}{100}$	$\frac{4}{1000}$
	2	6	7	5	.	8	3
							4

↑
Decimal point

Q. What is the value of the numeral 6 in the number 24.96?

A. $\frac{6}{100}$
0.06

Consider the position of the numeral 6 to that of the decimal point. 6 is two places to the right so it is in the hundredths place. The 6 represents 6 hundredths or $\frac{6}{100}$.

Q. In which number does the digit 3 have the greater value?
A) 13 900 or B) 97 300

A. A)

Check the position of the digit 3. In 13 900 the 3 is in the thousands place. In 97 300 the 3 is in the hundreds place. So 3 has greater value in 13 900.

a) What is the value of the numeral 5 in the number 4567?

500

b) What is the value of the numeral 7 in the number 271?

c) In which number does the digit 8 have smaller value?
A) 829 or B) 3587

d) In which number does the digit 4 have greater value?
A) 420 or B) 6247

e) Which digit in 4087 is in the same place value as the 1 in 165?

f) Which digit in 38.25 is in the same place value as the 4 in 1.47?

Compare the size of the digits in the same place, one at a time.
Work from left to right across each number.

Q. Which number is greater?
1346 or 1364?

A. **1364**

Thousands:

Both numbers have the digit 1 in the thousands place.

Hundreds:

Both numbers have the digit 3 in the hundreds place.

Tens:

In the tens place 6 is greater than 4.
So 1364 is greater than 1346.

Q. Place in order from largest to smallest:
300, 298, 308, 302

A. **308, 302, 300, 298**

Hundreds:

300 is larger than 200.

Tens:

All of the three numbers starting with 3 have zero in the tens place.

Units:

The three numbers starting with 3 have the digits 0, 8 and 2 in the units place. Ordering from largest to smallest gives 8, 2, and 0.

So far in order we have 308, 302, 300.
Then place 298.

a) Which number is greater?
6542 or 6524

b) Which number is smaller?
125 or 152

c) True or false?
545 > 554

d) True or false?
4014 > 4104

e) Place in order from largest to smallest: 25, 75, 22, 72, 57

f) Place in order from smallest to largest: 456, 546, 465, 564

g) Place in order from largest to smallest: 3001, 3020, 3030, 2300

h) Place in order from smallest to largest: 1011, 1101, 1001, 1111

Line up the decimal numbers at their decimal points.
Compare digits in their same place values, starting from the left.

Q. True or false?
 $3.6 < 3.07$

A. False

Remember '<' means 'less than'.

Units:

They are both 3.

Tenths:

6 is greater than 0. OR $6 > 0$

Therefore 3.6 is not less than 3.07
and the statement is false.

Q. Which number is greater:
4.30 or 4.03?

A. 4.30

Units:

They are both 4.

Tenths:

3 is greater than 0. OR $3 > 0$

Therefore 4.30 is greater than 4.03

a) True or false?
 $4.2 > 4.22$

False

b) True or false?
 $389.9 < 400$

c) True or false?
 $1.12 < 1.02$

d) True or false?
 $0.606 > 0.66$

e) Which number is greater:
6.38 or 6.3?

6.38

f) Which number is greater:
1.7 or 1.07?

g) Place in order from smallest to
largest: 42.0, 40.2, 42.4, 40.4

h) Place in order from largest to
smallest: 5.55, 5.05, 5.5, 5

i) Place in order from smallest to
largest: 3.41, 4, 3.43, 3.04

3.04, 3.41, 3.43, 4

j) Place in order from largest to
smallest: 2.63, 3.62, 6.32, 3.6

If the digit to the right of the place is

0, 1, 2, 3 or 4 - round down - keep the digit in the requested place unchanged.

5, 6, 7, 8 or 9 - round up - add 1 to the digit in the requested place.

Keep the number of digits in the answer the same as in the question by using zeros to fill the vacated spaces.

Q. Round off 448 to the nearest ten.

A. **450**

The digit to the right of the tens place is 8 so round up.

Add 1 to the 4 in the tens place.

Use a zero in the units place.

Q. Round off 317 to the nearest hundred.

A. **300**

The digit to the right of the hundreds place is 1 so round down.

Keep the 3 unchanged.

Use zeros in the tens and units places.

a) Round off 57 to the nearest ten.

60

b) Round off 72 to the nearest ten.

c) Round off 366 to the nearest ten.

d) Round off 691 to the nearest ten.

e) Round off 804 to the nearest ten.

f) Round off 3149 to the nearest ten.

g) Round off 772 to the nearest hundred.

700

h) Round off 209 to the nearest hundred.

i) Round off 455 to the nearest hundred.

j) Round off 2481 to the nearest hundred.

k) Round off 2315 to the nearest hundred.

l) Round off 5482 to the nearest hundred.

If the digit to the right of the decimal point is

0, 1, 2, 3 or 4 - round down - keep the digit in the unit place unchanged.

5, 6, 7, 8 or 9 - round up - add 1 to the digit in the unit place.

Leave off all digits after the decimal point.

Q. Round off 18.2 to the nearest whole number.

A. 18

The digit to the right of the decimal point is 2.
Round down by keeping the 8 in the units place unchanged.

a) Round off 3.08 to the nearest whole number.

3

b) Round off 9.06 to the nearest whole number.

c) Round off 4.92 to the nearest whole number.

d) Round off 6.71 to the nearest whole number.

e) Round off 15.7 to the nearest whole number.

f) Round off 14.2 to the nearest whole number.

g) Round off 22.8 to the nearest whole number.

23

h) Round off 14.5 to the nearest whole number.

i) Round off 0.7 to the nearest whole number.

j) Round off 0.9 to the nearest whole number.

k) Round off 1.2 to the nearest whole number.

l) Round off 8.6 to the nearest whole number.

m) Round off 3.79 to the nearest whole number.

n) Round off 4.28 to the nearest whole number.

- If the digit to the right of the requested place is
0, 1, 2, 3 or 4 - round down - keep the digit in the requested place unchanged.
5, 6, 7, 8 or 9 - round up - add 1 to the digit in the requested place.
- Keep the number of digits in the answer the same as in the question by using zeros to fill the vacated spaces.

Q. Estimate the difference between 418 and 103 by rounding off to the nearest ten before subtracting. **A.** $418 - 103$
 $\approx 420 - 100$
 $\approx \mathbf{320}$ Round 418 up to 420 and 103 down to 100. Subtract these answers to estimate the difference.

Q. Estimate the product of 28 and 53 by rounding off to the nearest ten before multiplying. **A.** 28×53
 $\approx 30 \times 50$
 $\approx \mathbf{1500}$ Round 28 up to 30 and 53 down to 50. Multiply these answers to estimate the product.

a) Estimate the sum of 123 and 49 by rounding off to the nearest ten before adding.

$$\begin{array}{r} 123 + 49 \approx 120 + 50 \\ \hline \approx \boxed{170} \end{array}$$

b) Estimate the sum of 71 and 29 by rounding off to the nearest hundred before adding.

$$\begin{array}{r} 71 + 29 \approx \\ \hline \approx \boxed{} \end{array}$$

c) Estimate the difference between 888 and 214 by rounding off to the nearest hundred before subtracting.

$$\begin{array}{r} - 214 \approx \\ \hline \approx \boxed{} \end{array}$$

d) Estimate the difference between 452 and 249 by rounding off to the nearest ten before subtracting.

$$\begin{array}{r} 452 - 249 \approx \\ \hline \approx \boxed{} \end{array}$$

e) Estimate the product of 38 and 64 by rounding off to the nearest ten before multiplying.

$$\begin{array}{r} 38 \times 64 \approx \\ \hline \approx \boxed{} \end{array}$$

f) Effie swam 8 km, rode her bike 33 km and ran 12 km. Estimate the total distance travelled by rounding off to the nearest tens.

$$\begin{array}{r} 8 + 33 + 12 \approx \\ \hline \approx \boxed{} \end{array}$$

- If the digit to the right of the decimal point is
0, 1, 2, 3 or 4 - round down - keep the digit in the unit place unchanged.
5, 6, 7, 8 or 9 - round up - add 1 to the digit in the unit place.
- Leave off all digits after the decimal point.

Q. Estimate the difference of the decimals 6.7 and 2.03 by rounding off to the nearest whole number.

A. $6.7 - 2.03$
 $\approx 7 - 2$
 ≈ 5

Round 6.7 up to 7.
Round 2.03 down to 2.
Subtract these answers to estimate the difference.

Q. Estimate the total cost by rounding to the nearest whole dollars:
 $\$15.25 + \$3.10 + \$4.80 + \6.95

A. $\$15.25 + \$3.10 + \$4.80 + \6.95
 $\approx \$15 + \$3 + \$5 + \7
 $\approx \$30$

Round each dollar value, then add to estimate the total cost.

a) Estimate the sum of the decimals 5.4 and 8.7 by rounding off to the nearest whole numbers.

$5.4 + 8.7 \approx 5 + 9$

\approx

14

b) Estimate the difference of the decimals 9.3 and 6.8 by rounding off to the nearest whole numbers.

$9.3 - 6.8 \approx$

\approx

c) Estimate the difference of the decimals 22.8 and 12.9 by rounding off to the nearest whole numbers.

\approx

\approx

d) Estimate the sum of the decimals 7.6 and 6.2 by rounding off to the nearest whole numbers.

\approx

\approx

e) Estimate the perimeter of a rectangular yard with a length of 4.7 m and a width of 8.2 m by rounding off to the nearest whole metres.

\approx

\approx

f) Estimate the total cost by rounding to the nearest whole dollars:
 $\$24.95 + \$9.85 + \$3.15 + \12.35

\approx

\approx