

12. [Place Value]

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MM3.2 1 1 2 2 3 3 4 4
MM4.1 1 1 2 2 3 3 4 4

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

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 value	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:

⇒ 740

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) What is the largest even, 3 digit number that contains the digits 1, 4 and 8?

f) What is the largest odd, 3 digit number that contains the digits 4, 5 and 8?

g) What is the largest odd, 4 digit number that contains the digits 1, 2, 5 and 6?

h) What is the smallest even, 3 digit number that contains the digits 0, 4 and 7?

Skill 12.1 Understanding the place value of a digit in a number (2).MM3.2 11 22 33 44
MM4.1 11 22 33 44

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.

i) In the number 210 which of the digits 2, 1 or 0 lies in the tens column?

j) In the number 3472 which of the digits 3, 4, 7 or 2 lies in the hundreds column?

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

l) In the number 2301 which of the digits 2, 3, 0 or 1 lies in the units column?

m) In the number 3447 which of the digits 3, 4 or 7 lies in the thousands column?

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

o) In the number 7210 which of the digits 7, 2, 1 or 0 lies in the hundreds column?

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

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

r) In the number 45.73 which of the digits 4, 5, 7 or 3 lies in the tenths column?

s) In the number 7361 which of the digits 7, 3, 6 or 1 lies in the thousands column?

t) In the number 21.80 which of the digits 2, 1, 8 or 0 lies in the units column?

u) In the number 1.025 which of the digits 1, 0, 2 or 5 lies in the hundredths column?

v) In the number 78.92 which of the digits 7, 8, 9 or 2 lies in the tenths column?

Skill 12.2 Finding the value of a digit in a number.

MM3.2 1 1 2 2 3 3 4 4
MM4.1 1 1 2 2 3 3 4 4

- 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 value	thousands	hundreds	tens	units	tenths	hundredths	thousandths
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) 97 300 B) 13 900
- A. B**
- 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)** What is the value of the numeral 6 in the number 9.6?

- d)** What is the value of the numeral 3 in the number 1.03?

- e)** In which number does the digit 8 have lesser value?
A) 987 B) 823

- f)** In which number does the digit 3 have greater value?
A) 6713 B) 439

- g)** In which number does the digit 5 have greater value?
A) 529 B) 3657

- h)** In which number does the digit 4 have lesser value?
A) 420 B) 6247

- i)** Which digit in 4087 is in the same place as the 1 in 165?

- j)** Which digit in 38.25 is in the same place 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.

a) $535 > 553$
True or false?

false

b) $364 < 463$
True or false?

c) $677 < 766$
True or false?

d) $221 > 212$
True or false?

e) $878 > 887$
True or false?

f) $5646 < 6546$
True or false?

g) $4014 < 4104$
True or false?

h) $3030 > 3003$
True or false?

i) Which number is smaller?
232 or 223

232

j) Which number is smaller?
125 or 152

k) Which number is greater?
788 or 778

l) Which number is smaller?
334 or 433

m) Which number is greater?
7557 or 7575

n) Which number is smaller?
2113 or 2131

o) Which number is greater?
6542 or 6524

p) Which number is smaller?
7437 or 7374

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

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) Place in order from largest to smallest:

25, 75, 22, 72, 57

b) Place in order from smallest to largest:

78, 87, 83, 37, 77

c) Place in order from largest to smallest:

12, 42, 24, 14, 22

d) Place in order from smallest to largest:

46, 54, 34, 55, 45

e) Place in order from largest to smallest:

768, 786, 776, 787

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

Skill 12.5 Comparing decimal numbers.

MM3.2 11 22 33 44
MM4.1 1 22 33 44

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

Q. $3.6 < 3.07$
True or false?

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) $4.2 > 4.22$
True or false?

false

b) $1.5 < 1.05$
True or false?

c) $1.12 < 1.02$
True or false?

d) $24.3 > 24.33$
True or false?

e) $389.9 < 400$
True or false?

f) $0.606 > 0.66$
True or false?

g) Which number is greater?
6.38 or 6.3

6.38

h) Which number is smaller?
15.4 or 15.42

i) Which number is greater?
2.2 or 2.22

j) Which number is smaller?
13.88 or 13.78

k) Which number is greater?
12.23 or 12.32

l) Which number is smaller?
1.7 or 1.07

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

Q. Place in order from largest to smallest:

9.8, 8.9, 8.8, 9

A. **9.8, 9, 8.9, 8.8**

Units:

9 is larger than 8.

Tenths:

9 is larger than 8.

When the number is whole like the 9 then think of it as 9.0

9 is larger than 8, which is larger than 0

a) Place in order from smallest to largest:

3.5, 3, 3.3, 5.3

3, 3.3, 3.5, 5.3

b) Place in order from largest to smallest:

1.2, 2.2, 1.1, 2.1

c) Place in order from smallest to largest:

6.7, 7.7, 6.6, 6,

d) Place in order from largest to smallest:

4.9, 9.4, 9, 4.4

e) Place in order from smallest to largest:

42.0, 40.2, 42.4, 40.4

f) Place in order from largest to smallest:

5.55, 5.05, 5.5, 5

g) Place in order from smallest to largest:

3.41, 4, 3.43, 3.04

h) Place in order from largest to smallest:

2.63, 3.62, 6.32, 3.6

Skill 12.7 Rounding whole numbers to a given place.

MM3.2 11 22 33 44
MM4.1 11 22 33 44

- 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 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.

a) Round 57 to the nearest ten.

60

b) Round 72 to the nearest ten.

c) Round 366 to the nearest ten.

d) Round 691 to the nearest ten.

e) Round 804 to the nearest ten.

f) Round 3149 to the nearest ten.

g) Round 772 to the nearest hundred.

800

h) Round 209 to the nearest hundred.

i) Round 455 to the nearest hundred.

j) Round 2481 to the nearest hundred.

k) Round 2315 to the nearest hundred.

l) Round 5482 to the nearest hundred.

m) Round 1782 to the nearest hundred.

n) Round 4543 to the nearest hundred.

Skill 12.8 Rounding decimal numbers to the nearest whole number.MM3.2 1 1 2 2 3 3 / 4
MM4.1 1 1 2 2 3 3 / 4 4

- 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 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 3.08 to the nearest whole number.**3****b)** Round 9.06 to the nearest whole number.**c)** Round 4.92 to the nearest whole number.**d)** Round 6.71 to the nearest whole number.**e)** Round 15.7 to the nearest whole number.**f)** Round 14.2 to the nearest whole number.**g)** Round 22.8 to the nearest whole number.**23****h)** Round 14.5 to the nearest whole number.**i)** Round 0.7 to the nearest whole number.**j)** Round 0.9 to the nearest whole number.**k)** Round 1.2 to the nearest whole number.**l)** Round 8.6 to the nearest whole number.**m)** Round 3.79 to the nearest whole number.**n)** Round 4.28 to the nearest whole number.

Skill 12.9 Estimating outcomes by rounding to the nearest 10 or 100.

MM3.2 11 22 33 44
MM4.1 11 22 33 44

- 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 to the nearest ten before subtracting.

$$\begin{aligned} \mathbf{A.} \quad & 418 - 103 \\ & \approx 420 - 100 \\ & \approx \mathbf{320} \end{aligned}$$

Round 418 up to 420 and 103 down to 100. Subtract these answers to estimate the difference.

a) Estimate the product of 28 and 53 by rounding to the nearest ten before multiplying.

$$28 \times 53 \approx 30 \times 50$$

$$\approx \boxed{1500}$$

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

$$71 + 29 \approx$$

\approx

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

\approx

\approx

d) Estimate the sum of 48 and 31 by rounding to the nearest ten before adding.

\approx

\approx

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

\approx

\approx

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

\approx

\approx

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

\approx

\approx

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

\approx

\approx

Skill 12.10 Estimating outcomes by rounding decimals to whole numbers.

MM3.2 11 22 33 44
MM4.1 11 22 33 / 4

- 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.

<p>Q. Estimate the total cost by rounding to the nearest whole dollars: \$15.25 + \$3.10 + \$4.80 + \$6.95</p>	<p>A. $\\$15.25 + \\$3.10 + \\$4.80 + \\6.95 $\approx \\$15 + \\$3 + \\$5 + \\7 $\approx \mathbf{\\$30}$</p>	<p>Round each dollar value, then add to estimate the total cost.</p>
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a) Estimate the sum of the decimals 5.4 and 8.7 by rounding 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 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 to the nearest whole numbers.

$$22.8 - 12.9 \approx$$

$$\approx$$

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

$$7.6 + 6.2 \approx$$

$$\approx$$

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

$$2(4.7 + 8.2) \approx$$

$$\approx$$

f) Estimate the difference of the decimals 6.7 and 2.03 by rounding to the nearest whole number.

$$6.7 - 2.03 \approx$$

$$\approx$$

g) Estimate the total cost by rounding to the nearest whole dollars:
\$10.30 + \$5.15 + \$8.95 + \$6.25

$$10.30 + 5.15 + 8.95 + 6.25 \approx$$

$$\approx$$

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

$$24.95 + 9.85 + 3.15 + 12.35 \approx$$

$$\approx$$