13. [Place Value]

continues on page 100

Skill 13.1 Understanding and finding the place value of a digit in a number (1).

MMYellow 1 1 2 2 3 3 4 4
MMRed 1 1 2 2 3 3 4 4

- Compare the position of the digit to the position 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
	1	0	2	5 .	7	6	3

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.

Q. Which digit in 32.95 is in the same place as the 3 in 5.367?

A. *9* The digit 3 is one place to the right of the decimal point.
In the number 32.95 the digit one place to the right is 9

a) Name the place of the underlined digit in the number 79<u>8</u>. [Hint: Is it units, tens or hundreds?] units

b) Name the place of the underlined digit in the number <u>2</u>84. [Hint: Is it units, tens or hundreds?]

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

d) In the number 42,006 which of the digits 4, 2, 0 or 6 lies in the thousands column?

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

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

g) Which digit in 6578 is in the same place as the 1 in 415?

h) Which digit in 456.2 is in the same place as the 6 in 63.79?

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?

continued from page 99

Skill 13.1 Understanding and finding the place value of a digit in a number (2).

MMYellow 1 1 2 2 3 3 4 4
MMRed 1 1 2 2 3 3 4 4

- Compare the position of the digit to the position 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. ***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
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.

k) What is the value of the numeral 4 in the number 3476?

l) What is the value of the numeral 6 in the number 1265?

m) What is the value of the numeral 3 in the number 24.36?

n) What is the value of the numeral 6 in the number 1.265?

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

p) In which number does the digit 8 have smaller value?
A) 28.29
B) 35.87

q) In which number does the digit 9 have smaller value?
A) 2.198
B) 42.379

r) In which number does the digit 7 have greater value?
A) 324.178
B) 19.782

Skill 13.2 Comparing and ordering whole numbers.

- 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) 545 > 554
True or false?

d) 4014 > 4104
True or false?

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

Skill 13.3 Comparing and ordering decimal numbers.

- Line up the decimal numbers at their decimal points by writing one number under the other.
- Compare digits in the same places, starting from the left.

Q. 3.6 < 3.07
True or false?

A. ***false***

Remember '<' means 'less than'.

Units:
They are both 3.

U .	T	H
3 .	6	
3 .	0	7

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.

U .	T	H
4 .	3	0
4 .	0	3

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?

U .	T	H
4 .	2	0
4 .	2	2

false

b) 389.9 < 400
True or false?

H	T	U .	T
3	8	9 .	9
		.	

c) 1.12 < 1.02
True or false?

U .	T	H
.		
.		

d) 0.606 > 0.66
True or false?

U .	T	H	T
.			
.			

e) Which number is greater?
6.38 or 6.3

U .	T	H
.		
.		

f) Which number is greater?
0.107 or 0.017

U .	T	H	T
.			
.			

g) Place in order from smallest to largest: 42, 40.2, 42.4, 40.4

40.2, 40.4, 42, 42.4

h) Place in order from largest to smallest: 6.66, 6.06, 6.6, 6.01

i) Place in order from smallest to largest: 3.41, 4.03, 3.43, 3.04

j) Place in order from largest to smallest: 2.63, 3.26, 6.32, 3.62

Skill 13.4 Rounding whole numbers to a given place.

- Underline the digit to the right of the requested place.
- If this digit is 0, 1, 2, 3 or 4 (< 5) - round down - keep the digit in the requested place the same.
  5, 6, 7, 8 or 9 (≥ 5) - 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***

448
The digit to the right of the tens place is 8.
$8 \geq 5$ so round up.
Add 1 to the 4 in the tens place to make 5.
Put a zero in the units place.

Q. Round 317 to the nearest hundred.

A. ***300***

317
The digit to the right of the hundreds place is 1. $1 < 5$ so round down.
Keep the 3 unchanged.
Put zeros in the tens and units places.

a) Round 37 to the nearest ten.

37 — *7 ≥ 5 round up by adding 1 to 3*

40

b) Round 72 to the nearest ten.

72

c) Round 98 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 782 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.

Skill 13.5 Rounding decimal numbers to a given place.

- Underline the digit to the right of the requested place.
- If this digit is 0, 1, 2, 3 or 4 (< 5) - round down - keep the digit in the requested place the same.
  5, 6, 7, 8 or 9 (≥ 5) - round up - add 1 to the digit in the requested place.

Q. Round 18.2 to the nearest whole number.

A. ***18***

18.2
The digit to the right of the unit is 2.
2 < 5 so round down.
Keep the 8 in the units place unchanged.

a) Round 3.8 to the nearest whole number. **4**

3.8 — *8 ≥ 5 round up by adding 1 to 3*

b) Round 9.6 to the nearest whole number.

9.6 — *6 ≥ 5 round up by adding 1 to ?*

c) Round 4.5 to the nearest whole number.

d) Round 6.7 to the nearest whole number.

e) Round 15.4 to the nearest whole number.

f) Round 14.3 to the nearest whole number.

g) Round 0.9 to the nearest whole number.

h) Round 8.64 to the nearest tenth. **8.6**

8.64 — *4 < 5 round down by keeping 6*

i) Round 3.79 to the nearest tenth.

j) Round 4.28 to the nearest tenth.

k) Round 1.25 to the nearest tenth.

l) Round 0.87 to the nearest tenth.

m) Round 7.254 to the nearest hundredth.

n) Round 5.267 to the nearest hundredth.

p) Round 3.789 to the nearest hundredth.

q) Round 4.245 to the nearest hundreth.

Skill 13.6 Estimating outcomes by rounding to the nearest 10 or 100.

- Underline the digit to the right of the requested place.
- If this digit is 0, 1, 2, 3 or 4 (< 5) - round down - keep the digit in the requested place the same.
  5, 6, 7, 8 or 9 (≥ 5) - 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.

(see skill 13.4, page 103)

Q. Estimate the difference between 418 and 103 by rounding to the nearest ten before subtracting.

A. $41\underline{8} - 10\underline{3}$
$\approx 420 - 100$
$= \mathbf{320}$

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 to the nearest ten before multiplying.

A. $2\underline{8} \times 5\underline{3}$
$\approx 30 \times 50$
$= \mathbf{1500}$

Round 28 up to 30 and 53 down to 50. Multiply these answers to estimate the product.

a) Estimate the sum of 23 and 49 by rounding to the nearest ten before adding.

same +1
$2\underline{3} + 4\underline{9} \approx 20 + 50 =$ 70

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

same +1
$7\underline{1} + 2\underline{9} =$

c) Estimate the difference between 88 and 14 by rounding to the nearest ten before subtracting.

$\approx$ $=$

d) Estimate the difference between 52 and 29 by rounding to the nearest ten before subtracting.

$\approx$ $=$

e) Estimate the product of 93 and 19 by rounding to the nearest ten before multiplying.

$\approx$ $=$

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

$\approx$ $=$

g) Estimate the total cost by rounding each amount to the nearest hundred before adding:
$119.00 + $198.00 + $387.00

$\approx$ $=$ $

h) Estimate the total cost by rounding each amount to the nearest hundred before adding:
$88.00 + $92.00 + $401.00 + $105.00

$\approx$ $=$ $

Skill 13.7 Estimating outcomes by rounding decimals to whole numbers.

- Underline the digit to the right of the requested place, in this case the tenths place.
- If this digit is 0, 1, 2, 3 or 4 (< 5) - round down - keep the digit in the requested place the same.
  5, 6, 7, 8 or 9 (≥ 5) - round up - add 1 to the digit in the requested place.
- Leave off all digits after the decimal point.

Q. Estimate the total cost by first rounding to the nearest dollar:
$15.25 + $3.10 + $4.80 + $6.95

A. *$15.2̲5 + $3.1̲0 + $4.8̲0 + $6.9̲5*
≈ $15 + $3 + $5 + $7
*= **$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 to the nearest whole number before adding.

same *+1*
5.4̲ + 8.7̲ ≈ 5 + 9 = **14**

b) Estimate the sum of the decimals 7.6 and 6.2 by rounding to the nearest whole number before adding.

..... ≈ ..... = ...

c) Estimate the difference between the decimals 22.8 and 12.9 by rounding to the nearest whole number before subtracting.

..... ≈ ..... = ...

d) Estimate the difference between the decimals 9.3 and 6.8 by rounding to the nearest whole number before subtracting.

9.3 – 6.8 ≈ ..... = ...

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

.....
≈
.....
= ..... m

f) Estimate the total cost by first rounding to the nearest dollar:
$24.95 + $9.85 + $3.15 + $12.35

.....
≈
.....
= ..... $