

Warm up Grade 6

Date: Nov. 26



1) Estimate the product or quotient. Which strategy did you use? Tell if your estimation is an overestimation or an underestimation.

a) 17.27×4

Estimate

$20 \times 4 = 80$

Over estimation

because $20 > 17.27$

So
 80 is $>$ actual product

b) $65.21 \div 5$

$65 \div 5 = 13$

Front-end

65 was smaller than 65.21

So our estimate of 13 is an under-estimation.

Homework Solutions

Practice

1. Estimate each product or quotient. Which strategies did you use?

Tell if your estimate is an overestimate or an underestimate.

- a) 7.01×9 b) 3.8×7 c) 11.85×5 d) 19.925×4
 e) $9.8 \div 5$ f) $12.31 \div 2$ g) $56.093 \div 7$ h) $225.3 \div 5$

a) Estimate

$$7 \times 9$$

$$= 63$$

Under estimation

Front end

b) Estimate

$$3 \times 7$$

$$= 21$$

Under estimation

Front end

b) Estimate

$$4 \times 7$$

$$= 28$$

over estimation

bench mark

or

c) Estimate

$$11 \times 5$$

$$= 55$$

Under estimation

Front end

or

c) Estimate

$$12 \times 5$$

$$= 60$$

over estimation

bench mark

d) Estimate

$$20 \times 4$$

$$= 80$$

over estimation

bench mark

e) $9.8 \div 5$

Estimation

$$10 \div 5$$

$$= 2$$

Bench mark

over estimation

f) $12.31 \div 2$

Estimation

$$12 \div 2$$

$$= 6$$

Bench mark

under estimation

g) $56.093 \div 7$

Estimation

$$56 \div 7$$

$$= 8$$

front end

under estimation

h) $225.3 \div 5$

Estimation

$$225 \div 5$$

$$= 8$$

benchmark

under estimation

Homework Solutions

2. Waldo paid \$29.85 for 3 admission tickets to the Calgary Tower.
Estimate the cost of one admission ticket.

$$\$30 \div 3 = \$10$$

Each ticket is about \$10. (Over estimate since 30 is larger than 29.85)

3. A pair of ice cleats for ice fishing costs \$14.89.
About how much will 6 pairs of ice cleats cost?
How did you find out?

$$\$14.89 \text{ is about } \$15$$

$$\$15 \times 6 = \$90$$

same as (Double and half mental math)

$$\$30 \times 3 = \$90$$

6 pairs of ice cleats cost about \$90. (Over estimate since 15 is larger than 14.89)

4. Estimate the perimeter of each square.
Tell if your estimate is an overestimate or an underestimate.
How do you know?



$$P = \text{Side} \times 4$$

$$1\text{cm} \times 4$$

$$4 \text{ cm}$$

Under estimate
since 1 cm
is less than
1.3 cm

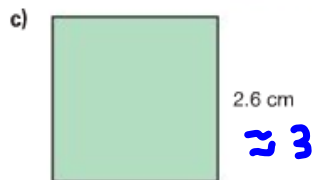


$$P = \text{Side} \times 4$$

$$2\text{cm} \times 4$$

$$8 \text{ cm}$$

Under estimate
since 2 cm
is less than
2.1 cm



$$P = \text{Side} \times 4$$

$$3\text{cm} \times 4$$

$$12 \text{ cm}$$

over estimate
since 3 cm
is more
than 2.6
cm

Homework Solutions

side of square is perimeter divide by 4

5. Estimate the side length of a square with perimeter:

a) 24.2 cm

24

b) 29.8 cm

30

c) 35.6 cm

36

side = perimeter ÷ 4

about 24 cm ÷ 4

6 cm

underestimate

side = perimeter ÷ 4

about 30 cm ÷ 4

7.5 cm

overestimate

side = perimeter ÷ 4

about 36 cm ÷ 4

9 cm

overestimate

6. a) Is 9.47×5 greater than, or less than, 45?

How can you estimate to find out?

b) Is $23.86 \div 4$ greater than, or less than, 6?

How can you estimate to find out?

Show your work.

6a) it is greater since 9 is smaller than 9.47 and we know 9×5 is 45 (Using 9×5 is front end estimation)

6b) 23.86 is close to 24 but smaller and we know

$24 \div 6 = 4$ so if you take a smaller number and divide it by 6 it is smaller again

7. Copy and complete. Write $>$, $<$, or $=$.

How did you decide which symbol to use?

a) $5.6 \times 2 \square 1.4 \times 4$

about

about

6×2

1.5×4

12

3×2 (Half and double)

6

$>$

b) $4.8 \div 2 \square 15.5 \div 5$

about

about

$5 \div 2$

$15 \div 5$

2.5

3

$<$

Ch. 3 Lesson 3



Multiply decimals by whole numbers

$$3.4 \quad \times \quad 6$$

When multiplying decimals, you do NOT line up decimal places BUT you line up numbers on top of each place

$$\begin{array}{r} 3.4 \\ \times 6 \\ \hline \end{array} \quad \rightarrow \quad \text{estimate } 3 \begin{array}{r} 3 \\ \times 6 \\ \hline 18 \end{array}$$

Step 1) Ignore the decimals until the end and multiply 34×6 (Show work)

$$\begin{array}{r} 34 \\ \times 6 \\ \hline 204 \end{array}$$

	30	4
6	$30 \times 6 = 180$	$4 \times 6 = 24$

Or area model

$30 \times 6 = 180$

$4 \times 6 = 24$

$so\ 180 + 24 = 204$

Using Estimate 20.4

→ because 20.4 is close to my estimate of 18.

Step 2) To replace the decimal, there are two methods



Method 1) Estimate! This will help you place your decimal

3.4×6

$Estimation: 3 \times 6 = 18$

My answer should be around 18

So $3.4 \times 6 = 20.4$ since it is close to 18

Be careful with this one especially with digits end in 5 or being multiplied by 5 or 10



Method 2) count the TOTAL number of digits after the decimal place in your original questions

3.4 Has 1 number after the decimal point

$\times 6$ has 0 numbers after the decimal place

20.4

1 # after decimal place



My answer should have only 1 number after the decimal place

Example: Find 4.5×7 (Show work by multiplying first)

$$\begin{array}{r} 3 \\ 4.5 \\ \times 7 \\ \hline 315 \end{array}$$

decimal goes here

Then Estimate! This will help you place your decimal 4.5×7

Estimation: $\underline{4 \times 7 = 28}$

My answer should be around 28

So the answer to $4.5 \times 7 = \underline{31.5}$

Your Turn



The decimal point is missing in each product. Use front end estimation to place each decimal point.



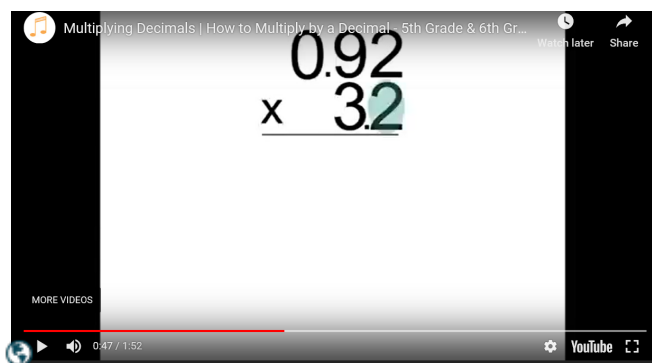
a) $8.64 \times 4 = 3556$ 35.56 b) $3.012 \times 3 = 9036$

↓
 $8 \times 4 = 32$

so answer
 is close to
 32

↓
 $3 \times 3 = 9$

Multiplying decimals song



Class / Homework

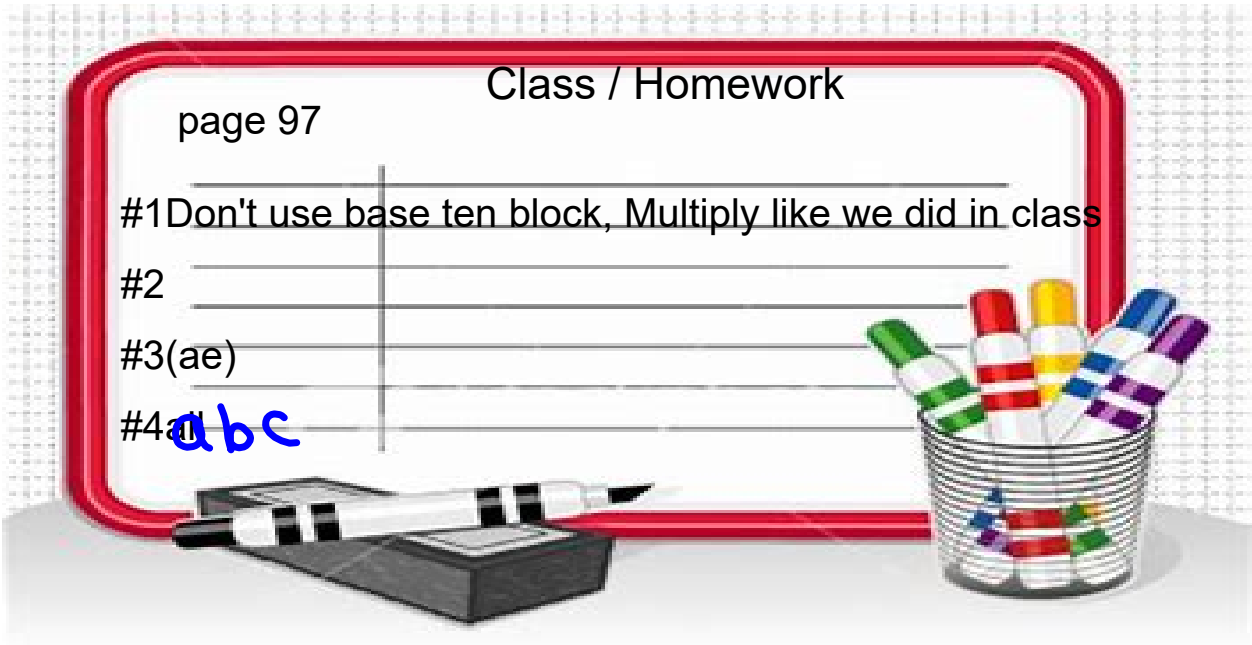
page 97

#1 Don't use base ten block, Multiply like we did in class

#2

#3(ae)

#4 abc

An illustration of a whiteboard with a red border and a grid background. The whiteboard has a title 'Class / Homework' at the top right and 'page 97' at the top left. Below the title, there are four numbered lines for notes. The first line contains the text '#1 Don't use base ten block, Multiply like we did in class'. The second line is empty. The third line contains '#3(ae)'. The fourth line contains '#4 abc'. To the right of the whiteboard is a wire mesh cup filled with several colorful markers. In front of the whiteboard is a black marker tray containing two white markers with black caps.

Multiply the following

1. 2.3×6

2. 2.5×7

Practice

..... Don't use base ten block, Multiply like we did in class

1. Use Base Ten Blocks to multiply.

a)
$$\begin{array}{r} 2.3 \\ \times 2 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 1.8 \\ \times 4 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 1.23 \\ \times 5 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 2.42 \\ \times 3 \\ \hline \end{array}$$

2. The decimal point is missing in each product.

Use front-end estimation to place each decimal point.

a) $7.1 \times 5 = 355$

b) $3.12 \times 6 = 1872$

c) $15.466 \times 3 = 46398$

d) $1.408 \times 5 = 7040$

e) $2.005 \times 8 = 1604$

f) $8.25 \times 4 = 330$

2 a) $7.1 \times 5 = 355$

Step 1: $7 \times 5 = 35$ (estimation)

Step 2: $7.1 \times 5 = 35.5$ (I know the decimal is correct because of my estimation)

3. Use benchmarks to estimate each product.

a) 2.4×6

b) 4.38×4

c) 1.499×6

d) 6.721×2

e) 3.983×3

f) 7.3225×5

4. Multiply.

a) 8.2×4

b) 1.02×6

c) 5.9×2

d) 6.112×3

e) 3.525×7

f) 5.354×6

5. Estimate to choose the correct product for each multiplication question.

	Question	Possible Products		
a)	2.85×3	855	85.5	8.55
b)	12.36×4	494.4	49.44	4.944
c)	148.73×5	7.4365	74.365	743.65

a. $3 \times 3 = 9$ (the correct answer is 8.55)

b. $12 \times 4 = 48$ (the correct answer is 49.44)

c. $149 \times 5 =$ $100 \times 5 = 500$
 $40 \times 5 = 200$
 $9 \times 5 = \underline{45}$
 745 (the correct answer is 743.65)

6. Elisa works in a hospital lab in Brandon, Manitoba.
In 1 h, she tested 7 tubes of blood.
Each tube contained 12.25 mL of blood.
How much blood did Elisa test?
How did you find out?

7. Naja saved \$14.75 each week for 8 weeks.
She had just enough money to buy a family membership
to the Vancouver Aquarium. About how much was
the cost of the membership?

Step 1: $14.75 \times 8 =$ (need to know that it is a multiplication question)

Step 2: $15 \times 8 =$

$$\begin{array}{r} 10 \times 8 = 80 \\ 5 \times 8 = 40 \\ \hline 120 \end{array}$$

Step 3: The cost of the membership was about \$120

8. Tianna has saved \$9.75 each week for 7 weeks.
She wants to buy a snowboard that costs \$80.45, including tax.
- Does Tianna have enough money? How do you know?
 - If your answer to part a is no, how much more money does Tianna need?



9. The decimal point in some of these products is in the wrong place. Identify the mistakes, then write each product with the decimal point in the correct place.

a) $4.01 \times 5 = 200.5$

b) $7.893 \times 3 = 23.679$

c) $89.85 \times 4 = 35.94$

d) $1.98 \times 3 = 0.594$

9 a) $4.01 \times 5 = 200.5$

Step 1: $4 \times 5 = 20$

Step 2: the decimal should be 20.05 not 200.5



10. a) Akuna sold three 1.375-L bottles of birch syrup to raise money for his school in Hay River.
Did Akuna sell more or less than 4 L of syrup?
How much more or less? Explain how you know.
- b) Akuna sold each bottle of syrup for \$74.79.
How much money did he raise?

11. The Townsend's big-eared bat lives in river valleys in southern British Columbia. It has a mass of 8.812 g. What is the combined mass of 6 of these tiny bats?



12. Write a story problem that can be solved by multiplying 4.026 by 7.
Trade problems with a classmate and solve your classmate's problem.

13. You can estimate how tall a child will be as an adult by doubling her height at 2 years of age.
Serena is 2 years old and 81.4 cm tall.
About how tall will Serena be as an adult?

14. The Three Dog Bakery in Vancouver sells bags of all-natural chicken-flavoured dog food for \$7.95 each. Saima buys 3 bags.

a) Saima gives the cashier \$25.00.

How much change should she receive?

b) Each bag has a mass of 2.268 kg.

Does Saima have more or less than 7 kg of dog food altogether? How do you know?



Step 1: $7.95 \times 3 =$

Step 2: $8 \times 3 = 24$ (estimation)

Step 3: $795 \times 3 =$

$700 \times 3 =$	2100
$90 \times 3 =$	270
$5 \times 3 =$	<u>15</u>
	2385

Step 4: $7.95 \times 3 = 23.85$ (I know where to put my decimal because of my estimation)

Step 5 (Question a)

25.00
<u>$- 23.85$</u>
1.15

She should receive \$1.15 in change

Step 6: (Question b)

$2.268 \text{ kg each} \times 3$ (he bought 3 bags) =

$2 \times 3 = 6$ (estimation)

$2268 \times 3 =$

$2000 \times 3 =$	6000
$200 \times 3 =$	600
$60 \times 3 =$	180
$8 \times 3 =$	<u>24</u>
	6812

$2.268 \times 3 = 6.812$ (I knew where to put the decimal because of my estimation)

Saima has **less** than 7 kg of dog food.