Grade 5 – Lesson 5

Math Practice Sheets

Multiplying Whole Numbers Part II

- Examples
- Practice Questions
- Extra Challenge Unit

Student Name

_____

Unit 5.1

Multiplying Greater Numbers

Example

Multiply 1,242 × 46.

Multiply by ones and regroup if necessary.

```
  1 2 1
  1,242
×   46
  7,452
```

Multiply by tens and regroup if necessary.

```
    1
  1 2 1
  1,242
×   46
  7,452
 49,680
```

Add the partial products.

```
    1
  1 2 1
  1,242
×   46
  7,452
+ 49,680
 57,132
```

So, 1,242 × 46 = 96,192

Exercise

1. Find the product for each of the following.

a) 2,235 × 32

b) 5,132 × 62

c) 6,785 × 53

d) 2,155 × 83

e) 7,097 × 55

f) 9,644 × 35

g) 3,567 × 28

h) 391 × 97

i) 789 × 94

j) 859 × 87

k) 1,704 × 99

l) 7,986 × 47

Unit 5.1

Multiplying Greater Numbers

Exercise

2. Multiply each of the following factors.

a) 1,345 × 42 b) 7,231 × 81 c) 2,034 × 86 d) 3,905 × 37

e) 956 × 48 f) 5,069 × 38 g) 6,780 × 99 h) 9,089 × 38

i) 3,890 × 21 j) 9,001 × 34 k) 2,148 × 48 l) 567 × 98

3. If a chocolate factory produces 3,452 chocolates each day, how many chocolates does the factory produce in 45 days?

4. Find the total number of birds in 56 groups if each group contains 3,021 birds.

Multiplying Greater Numbers

Exercise

5. Use the table on the right to answer the following questions.

Animal	Speed (m/hr)
Elk	81,630 m
Zebra	72,560 m
Gazelle	90,700 m
Rabbit	63,490 m

a) How many meters can a gazelle run in 45 hours?

b) What distance can an elk run in 22 hours?

c) How many miles can a rabbit run in 23 hours?

d) A gazelle and a zebra start running together. How many more meter can the Gazelle run in 14 hours?

e) If a rabbit runs 21 hours and an elk runs 13 hours, how many miles do they run together?

6. The length of Lake Michigan is about 14 times less than the length of the Nile River. If the length of Lake Michigan is about 307 miles, find the approximate length of the Nile River.

7. Which of the following is a reasonable product of 789 × 45?

a) 35,505 b) 35,055 c) 35,555 d) 36,000

Unit 5.2

Multiplying Numbers Ending at Zero

Example

Find the product: 4,500 × 310

Step I: Multiply the ones by omitting 0s.	Step II: Multiply the tens.	Step III: Add partial sums and append the omitted zeros.	To multiply 2 numbers ending at zero; first omit the zeros and multiply the numbers except zero. Next append the omitted zeros after the product of nonzero terms.
45 × 31 45	45 × 31 45 + 1,350 1,395	1,395,000	

So, the product of 4,500 × 310 = 1,395,000

Exercise

1. Find the product of each of the following numbers.

a) 2,200 × 40

b) 6,100 × 60

c) 7,600 × 50

d) 5,500 × 800

e) 7,000 × 550

f) 7,900 × 350

g) 3,700 × 280

h) 391 × 97

i) 8,900 × 940

j) 9,500 × 370

k) 9,700 × 90

l) 8,600 × 40

Unit 5.2

Multiplying Numbers Ending at Zero

Exercise

2. Compute the product of each of the following.

a) 4,500 × 32 b) 7,200 × 80 c) 2,000 × 860 d) 5,900 × 70

e) 900 × 480 f) 690 × 300 g) 6,700 × 900 h) 9,080 × 100

i) 3,800 × 210 j) 9,000 × 340 k) 4,800 × 400 l) 5,660 × 0

3. 3,400 people watch a film at a local theatre each day. How many people watch the film in 250 days?

4. The cost of a watch is about $4.90. What is the total cost of 230 watches?

Unit 5.2

Multiplying Numbers Ending at Zero

Exercise

5. Use the table at right to answer the given questions.

Animal	Weight (lbs)
Elephant	7,500
Rhinos	4,200
Alligator	800
Turtle	600

a) What will be the total weight of 12 elephants?

b) What will be the total weight of 120 alligators?

c) What is the weight of the freight of a front-end loader if it has a load of 21 rhinos?

d) On seashore, there are two groups of alligators and two groups of turtles. If there are 130 in each group of alligators and 110 in each group of turtles what will be the total amount of both alligators and turtles?

6. How many zeros are there in the product of 45,000 × 440?

a) 5 b) 6 c) 4 d) 7

7. How much money does Rose need to pay her costs for 45 months if she pays $390 each month?

Unit 5.3

Multiplying 3 Numbers

Example

Find the product.

$14 \times 5 \times 90$

First, multiply the first two numbers. $14 \times 5 = 70$

Then multiply the product of two numbers with third digit. i.e. $70 \times 90 = 6{,}300$

So,

$14 \times 5 \times 90 = 6{,}300$

This is the use of associative law.

Find the product.

$14 \times 5 \times 90$

Also, we can multiply the last two numbers and then multiply their product by the first digit.

i.e. $\underbrace{90 \times 5} \times 14 = 450 \times 14 = 6{,}300$

Similarly,

$16 \times 5 \times 35 = 80 \times 35$

$= 2{,}800$

This is the use of associative law.

Exercise

1. Find the product of each of the following.

a) $40 \times 18 \times 5$ b) $72 \times 5 \times 80$ c) $20 \times 8 \times 55$ d) $52 \times 5 \times 70$

e) $90 \times 15 \times 10$ f) $9 \times 15 \times 20$ g) $70 \times 15 \times 40$ h) $30 \times 25 \times 40$

i) $60 \times 45 \times 20$ j) $110 \times 3 \times 60$ k) $48 \times 22 \times 50$ l) $56 \times 10 \times 40$

Unit 5.3

Multiplying 3 Numbers

Exercise

2. Find the product of the following numbers by using associative property.

a) 24 × 50 × 16

b) 19 × 40 × 15

c) 35 × 70 × 20

d) 52 × 25 × 16

e) 90 × 9 × 90

f) 64 × 8 × 25

g) 45 × 20 × 15

h) 70 × 50 × 60

3. An army regiment has 21 battalions. Each battalion has 50 companies. Each company has 15 troops. How many troops are in the regiment?

4. The cost of each apple is 23¢. Each person at a party eats 8 apples. If there are 48 people at a party, what is the cost of all the apples?

5. Calculate the product of 56 × (50 × 46). Then calculate the product of (56 × 46) × 50. Is the product in both cases the same? Explain why or why not.

Unit 5.3

Multiplying 3 Numbers

Exercise

6. The table on the right shows the total number of animals that a farmer is keeping. Use the table to answer the following questions.

Pets	Number
Cows	45
Buffaloes	56
Goats	75
Sheep	60

a) If each cow needs 15 kg of grain each day, how many kg of grain is needed to feed all the cows for 23 days?

b) If each buffalo gives 25 liters of milk each day, how many liters of milk can a buffalo farmer collect in 30 days from his buffaloes?

c) If the cost of each goat is $85, what will be the total cost of all the goats?

d) One kg of grain costs 25¢. If two kg of grain is needed to feed each goat and two kg of grain is needed to feed each sheep each day, how much money does the farmer spend for goats and sheep for one day?

7. Which of the following properties of multiplication is most useful in multiplying three numbers?

a) Commutative b) Zero c) Identity d) Associative

Unit 5.4

Concepts of Exponents

Example

A base number raised to a number indicates how many times that base number is multiplied by itself. This 'raised to' number we call an exponent.

$4^5 = 4 \times 4 \times 4 \times 4 \times 4$ i.e. in 4^5, 4 is the base and 5 is the exponent of 4.

$7 \times 7 \times 7 \times 7 = 7^4$ (Exponent: 4; Base: 7)

i.e. 7 is base and 4 is exponent.

The exponent number can be expressed in the following ways.

Exponential notation = 7^4

Expanded form = $7 \times 7 \times 7 \times 7$

Standard form = Product = 2,401

Exercise

1. Write following numbers in exponential form.

a) $7 \times 7 \times 7 \times 7 \times 7$

b) $3 \times 3 \times 3 \times 3 \times 3 \times 3$

c) $9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9$

d) $5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5$

e) $12 \times 12 \times 12 \times 12 \times 12 \times 12 \times 12$

f) $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$

g) $8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8$

h) $24 \times 24 \times 24 \times 24 \times 24$

2. Express the following exponents in expanded form.

a) 9^4

b) 7^6

c) 15^3

d) 13^5

e) 10^7

f) 11^4

Unit 5.4

Concepts of Exponents

Exercise

3. Express the following exponents in standard form.

a) 5^4 b) 2^7

c) 13^3 d) 12^2

e) 10^6 f) 8^5

4. Is 18 the standard form of 9^2? Why or why not?

5. Write the expanded form and then the standard form of 15^3.

6. In 23^{12}, identify and write the base and the exponent.

7. What is the standard form of 25^3?

8. Which of the following computes to the same value as 9^3 in standard form?

a) 9^2 b) 3^6 c) 15^3 d) 3^9

Exercise

9. Is 5^4 equal to 625?

10. David spends $2 each day. How much does he spends in 8 days? Express in exponential form.

11. In problem 10, how much money does he spend in 32 days? Express in standard form.

12. Express the following first in expanded form and then exponential form using the smallest base integer that is possible.

a) 1,024 = _____ = _____

b) 169 = _____ = _____

c) 2,401 = _____ = _____

d) 160,000 = _____ = _____

13. Laura said that the standard form of 3^5 is same as 5^3. Is she right? Explain.

Unit 5.5

Multiplication Equations and Inequalities

Example

Rose's salary in 2004 was $345 per month. Her salary in 2009 was 6 times more than that of 2004. What was Rose's salary in 2009?

First, identify the given of the problem.
The salary in 2004 was $345 per month.

The increase is 6 times.

To find the salary of Rose in 2009,

first make a plan to solve.

Let the salary of 2009 be x.

Then from the narrative,

$$\$345 \times 6 = x$$

$$\therefore x = \$2{,}070$$

$$\begin{array}{r} 345 \\ \times\ 6 \\ \hline 2{,}070 \end{array}$$

So,

Rose's salary in 2009 is $2,070.

Exercise

1. Sonny earns $45 per day. Harry earns 32 times more than Sonny each day. How much does Harry earn each day? Write an equation and solve.

2. Kelly collected 2 packages of stickers which contained 234 stickers each. If Pinky collected 7 times more stickers, how many stickers did Pinky collect?

3. Write a world problem you would encounter in your daily life that would require your solving a mathematical equation. Write the equation and solve it.

Unit 5.5

Multiplication Equations and Inequalities

Exercise

4. Use the signs '<', '=', or '>' and compare the following inequalities.

a) 3^4 _____ 4^3

b) 12×43 _____ 42×13

c) 9^2 _____ 3^4

d) 252×32 _____ $32 \times 18 \times 14$

e) $20 \times 56 \times 25$ _____ 111×250

f) $20 \times 56 \times 25$ _____ 112×250

5. Find the total distance in meters if the distance between two cities is about 450 miles. (1 mile = 1,814 meter)

6. Find the total time required for Sam to solve a problem in minutes if he spends from 6:30 to 9:30 in the morning and 4:45 to 7:45 in the evening to solve a problem.

7. Lily has 44 earrings. If the cost of each ring is $23, what is the total cost of all her rings? Write a multiplication sentence for the situation and solve.

Unit 5.5

Multiplication Equations and Inequalities

Exercise

8. A 5-star hotel consists of 36 well appointed rooms. Another hotel has 9 times more rooms than the first one. How many well-appointed rooms are there in both hotels together?

9. A shopping complex has 3 halls with a capacity of 250 people each. If another complex has the same number of halls with a capacity of 545 people each, find the total capacity of all the halls in the second complex.

10. Every person at a party pays $45.65 for dinner and pays $23.35 for drinks. If 95 people attend the meeting, what is the total cost?

11. About 455 students enroll each year in a school. If there are 55 schools with the same enrollment, how many students in total enroll for one year in all 55 schools?

Unit 5.6

Math Challenges

Exercise

1. Multiply the following.

a)
$$\begin{array}{r} 2{,}341 \\ \times\ 23 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 8{,}745 \\ \times\ 32 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 5{,}672 \\ \times\ 73 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 5{,}436 \\ \times\ 230 \\ \hline \end{array}$$

e)
$$\begin{array}{r} 9{,}005 \\ \times\ 450 \\ \hline \end{array}$$

f)
$$\begin{array}{r} 7{,}678 \\ \times\ 173 \\ \hline \end{array}$$

2. Jack's family spends $3,452 in a month. How much will his family spend in 23 months?

Unit 5.6

Math Challenges

Exercise

3. What will be the product of 123,456 multiplied by 78?

4. If the cost of each piece of an apple is $0.40, what will be the total price of 5,692 apples?

5. There are 4,056 animals on a farm. If the average cost to feed each animal is $0.90 per day, find the total cost to feed each animal for a week.

6. What will be the product of 23,400 and 6,400?

7. How many meters does an airplane fly if it flies 3,400 miles in a week?
(1 mile = 1,814 meters)

Math Challenges

Exercise

8. Tina drinks 12 glasses of water each day. If each glass contains 250 ml of water, how much water does she drink in 25 days?

9. A bookseller sells 65 boxes of books each week. The cost of each book is $35. If each box contains 80 books, how much money does he earn from selling books each week?

10. Prince spends $10 each day. He expressed his 9 days cost as 10^9. Is he correct? Explain.

11. What will be the standard form of 20^4?

12. Write the expanded form of 45^7.

Unit 5.6

Math Challenges

Exercise

13. There are 436 chocolate bars in a bag. If the weight of each chocolate bar is 900 mg, find the total weight of the bag.

14. Lily bought 45 books. If the cost of each book is $349, find the total amount spent by Lily for books.

15. About 690 climbers spent $340 per week for dinner. How much do they spend for dinners in 10 weeks?

16. How much money does a company need to build 650 miles of a road, if the cost of each mile is $4,562?

17. Write the standard form of number 75^3.

Congratulations!

You have finished a lesson. You should be very proud of yourself.
Now it is time to progress to the next lesson.
Your next assignment is notated by a green arrow.

Grade 5 — Answer Key of Lesson 5

Unit 5.1

1. a) 71,520 b) 318,184 c) 359,605 d) 178,865
   e) 390,335 f) 337,540 g) 99,876 h) 37,927
   i) 74,166 j) 74,733 k) 168,696 l) 375,342
2. a) 56,490 b) 585,711 c) 174,924 d) 144,485
   e) 45,888 f) 192,622 g) 671,220 h) 345,382
   i) 81,690 j) 306,034 k) 103,104 l) 55,566
3. 155,340 4. 169,176 5. a) 4,081,500 m b) 1,795,860
   c) 1,460,270 d) 253,960 e) 2,394,480 6. 4,298 miles
7. a

Unit 5.2

1. a) 88,000 b) 366,000 c) 380,000 d) 4,400,000
   e) 3,850,000 f) 2,765,000 g) 1,036,000 h) 37,927
   i) 8,366,000 j) 3,515,000 k) 873,000 l) 344,000
2. a) 144,000 b) 576,000 c) 1,720,000 d) 413,000
   e) 432,000 f) 207,000 g) 6,030,000 h) 908,000
   i) 798,000 j) 3,060,000 k) 1,920,000 l) 0
3. 850,000 4. $1,127 5. a) 90,000 b) 96,000
   c) 88,200 d) 494,000 6. a 7. 17,550

Unit 5.3

1. a) 3,600 b) 28,800 c) 8,800 d) 18,200
   e) 13,500 f) 2,700 g) 42,000 h) 30,000
   i) 54,000 j) 19,800 k) 52,800 l) 22,400
2. a) 19,200 b) 11,400 c) 49,000 d) 20,800
   e) 72,900 f) 12,800 g) 13,500 h) 210,000
3. 15,750 4. 8,832 cents 5. 128,800; associative property
6. a) 15,525 kg b) 42,000 L c) $6,375 d) 6,750 cents
7. d

Unit 5.4

1. a) 7^5 b) 3^6 c) 9^7 d) 5^8
   e) 12^7 f) 6^7 g) 8^8 h) 24^5
   q) 4,626 r) 2,415 s) 891 t) 1,962
2. a) 9×9×9×9 b) 7×7×7×7×7×7 c) 15×15×15
   d) 13×13×13×13×13 e) 10×10×10×10×10×10×10 f) 11×11×11×11
3. a) 625 b) 128 c) 2,197 d) 144
   e) 1,000,000 f) 32,768 4. no, 9 x 9 = 81
5. 15×15×15=3,375 6. box, 23; export=12 7. 15,625
8. b
9. yes 10. 2^4 11. 64
12. a) 2×2×2×2×2×2×2×2×2×2; 2^{10} b) 13×13=13^2 c) 7×7×7×7=7^4
    d) 20×20×20×20=20^4 13. no; 3^5=243 and 5^3=125

Grade 5 Answer Key of Lesson 5

Unit 5.5

1. $45×32=$1,440
2. 3,276
4. a) >
b) <
c) =
d) =
e) >
f) =
5. 816,300 meters
6. 360 minutes
7. 44×$23=$1,012
8. 360
9. 1,635 people
10. 6,555
11. 25,025

Unit 5.6

1. a) 53,843
b) 279,840
c) 414,056
d) 1,250,280
e) 4,052,250
f) 1,328,294
2. 79,396
3. 9,629,568
4. $2276.8
5. $36,504
6. 149,760,000
7. 6,167,600
8. 75,000 ml
9. $182,000
10. Yes
11. 160,000
12. 45×45×45×45×45×45×45
13. 392,400 mg
14. 15,705
15. $2,346,000
16. $2,965,300
17. 421,875