GRADE 4

UNIT 1

Lesson 4

Multiplication and Division

In the first part of this lesson you will learn how to estimate products and then you will learn how to multiply a whole number by another whole number. In the second part of the lesson you will learn what it means to divide into equal parts.

Estimating Products

We can use estimation when we do not need the exact product or when we need to check the reasonableness of an answer. Let us look at an example of an estimated product.

Example 1: Ace Hiking Club has 49 members for whom the club wishes to buy shirts. The budget for shirts is $1600 and each shirt costs $31. Will there be enough money to buy the shirts for all the members?

Solution: $49 \rightarrow 50$ (49 rounds to 50)
$\times 31 \rightarrow \times 30$ (31 rounds to 30)
$1519 \quad 1500$

Since 1519 is very close to 1500 then the estimate is quite good. From the estimate it could be seen immediately that there was enough money to buy the shirts.

Example 2: Eddy works in a store packing boxes. He has 22 shelves empty and each shelf holds 9 boxes. What is the total number of boxes Eddy could pack on the shelves?

Solution: $22 \rightarrow 20$ (22 rounds to 20)
$\times 9 \rightarrow \times 10$ (9 rounds to 10)
$198 \quad 200$

Since 198 is very close to 200 the estimate is very good. According to the estimate Eddy could pack about 200 boxes.

Independent Work

Use estimation to find the product

(1) 27×33

(A) 810

(B) 900

(C) 890

(D) 990

(2) 49×18

(A) 880

(B) 980

(C) 900

(D) 1000

(3) 53×29

(A) 1500

(B) 1530

(C) 1590

(D) 1450

(4) 57×22

(A) 1140

(B) 1320

(C) 1200

(D) 1250

(5) 68×39

(A) 2650

(B) 2720

(C) 2730

(D) 2800

(6) 56×43

(A) 2418

(B) 2400

(C) 2240

(D) 2580

Answers: (1) B; (2) D; (3) A; (4) C; (5) D; (6) B.

Multiplying by Whole Numbers

Multiplication is repeated addition. Consider the question, "How many days are there in 6 weeks?" Since there are seven days in a week we could easily answer this question by adding. 7+7+7+7+7+7 = 42. On the other hand if we know our multiplication facts we could multiply, 7×6 = 42. This is the same answer we obtained by adding.

Another important point to remember is that when multiplying by two or more digits you may have to regroup.

Example 3: Multiplying without regrouping.

Step 1 $\begin{array}{r} 32 \\ \times 23 \\ \hline 96 \end{array}$ (multiply the ones) Step 2 $\begin{array}{r} 32 \\ \times 23 \\ \hline 96 \end{array}$ (multiply the tens)

Step 3 Add $\begin{array}{r} +640 \\ \hline 736 \end{array}$

Example 4: Multiplying with regrouping.

Step 1 $^{2}57$ (multiply the ones and regroup)
$\times 34$
228

Step 2 $^{2}57$ (multiply the tens and add the extra tens from regrouping)
$\times 34$
228

Step 3 Add $+1710$
1938

Independent Work

Multiply

(1) 47×51

(A) 2097

(B) 252

(C) 2082

(D) 2397

(2) 58×62

(A) 4064

(B) 3596

(C) 3186

(D) 464

(3) 66×72

(A) 4752

(B) 4342

(C) 594

(D) 4545

(4) 84×32

(A) 420

(B) 2688

(C) 2580

(D) 2588

(5) 57×39

(A) 2223

(B) 684

(C) 6084

(D) 1963

(6) 76×45

(A) 684

(B) 6354

(C) 3420

(D) 3190

Answers: (1) D; (2) B; (3) A; (4) B; (5) A; (6) C.

Division

Just as the answer to a multiplication problem could be found by repeated addition, so too the answer to a division problem can be found by repeated subtraction.

Example 5: Divide 36÷6.

36
−6
30
−6
24
−6
!8
−6
12
−6

$$\begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$$

We now count the number of times we subtracted 6 from 36, we see it is 6 times. Therefore we see that $36 \div 6 = 6$.

It is important to remember that when we divide we are sharing into equal groups. If we have 20 apples to divide by 4, then we must have 4 groups each containing 5 apples. The division sentence would be, $20 \div 4 = 5$.

Example 6: $64 \div 8 = ?$ Division with no remainder

Here we could use our multiplication facts to help us. What times 8 is equal to 64? Our multiplications facts tell us that $8 \times 8 = 64$. Therefore $64 \div 8 = 8$.

Example 7: $46 \div 9 = ?$ Division with remainder

Using our multiplication facts we see that $9 \times 5 = 45$. Therefore $46 \div 9 = 5$ with a remainder of 1.

Answer: 5R1

Independent Work

(1) $54 \div 6$

(A) 9

(B) 7

(C) 4

(D) 6

(2) $57 \div 8$

(A) 9

(B) 11R2

(C) 7R1

(D) 7

(3) 69÷9

(A) 8

(B) 8R3

(C) 7

(D) 7R6

(4) 78÷7

(A) 11

(B) 11R1

(C) 10R8

(D) 12

(5) 63÷6

(A) 10R3

(B) 11

(C) 9

(D) 10

(6) 72÷8

(A) 8R1

(B) 12

(C) 9

(D) 8

Answer: (1) A; (2) C; (3) D; (4) B; (5) A; (6) C.

Lesson 4 Quiz

(1) Estimate to find the product: 24×21.

(A) 480

(B) 400

(C) 420

(D) 504

(2) Estimate to find the product: 43×22.

(A) 946

(B) 880

(C) 860

(D) 800

(3) 42×23

(A) 920

(B) 840

(C) 800

(D) 966

(4) Multiply 46×26

(A) 1196

(B) 368

(C) 3248

(D) 1066

(5) Multiply 58×42

(A) 3048

(B) 348

(C) 2436

(D) 2126

(6) Multiply 71×67

(A) 923

(B) 4757

(C) 813

(D) 3657

(7) Tim is stacking his baseball cards in piles of 12. He has made 23 stacks of 12 with 2 cards left over. How many cards does Tim have?

(A) 274

(B) 69

(C) 71

(D) 278

(8) Divide: 54÷6.

(A) 8

(B) 7

(C) 9

(D) 6

(9) Divide: 75÷9.

(A) 8R3

(B) 9

(C) 7

(D) 8

(10) Divide: 82÷8.

(A) 8R2

(B) 10

(C) 9R2

(D) 10R2

Answers: (1) B; (2) D; (3) C; (4) A; (5) C; (6) B (7) D; (8) C; (9) A; (10) D.