Exercise and Calories

Packet #8 ½ Credit

EXAMPLE According to the National Institutes of Health, the average number of calories spent per hour by a 150-pound person who rides a bicycle 6 miles per hour is 240 calories. The calories spent in a particular activity vary in proportion to one's body weight. For example, a 100-pound person burns $\frac{1}{3}$ fewer calories, and a 200-pound person burns $\frac{1}{3}$ more calories.

Find the average number of calories burned by a 100-pound person and a 200-pound person who ride bikes at 6 mph for one hour. Round your answer to the nearest calorie.

100-pound person
Think: $\frac{1}{3}$ fewer is about 33% fewer. Multiply by 100% minus 33%, or 67%
240 calories per hour × 67% = 240 × 0.67 = 160.8 ≈ 161 cals./hr

200-pound person
Think: $\frac{1}{3}$ more is about 33% more. Multiply by 100% plus 33%, or 133%
240 calories per hour × 133% = 240 × 1.33 = 319.2 ≈ 319 cals./hr

A 100-pound person burns an average of 161 calories per hour bicycling at 6 mph.
A 200-pound person burns an average of 319 calories per hour bicycling at 6 mph.

Directions Find the average number of calories a 100 lb person and a 200 lb person burn while engaged in the following activities. Round your answer to the nearest calorie.

	Activity (1 hour)	Calories burned by 150-lb person	Calories burned by 100-lb person	Calories burned by 200-lb person
1.	Running in place	650 cals./hr		
2.	Running 10 mph	1,280 cals./hr		
3.	Swimming 25 yds/min.	275 cals./hr		
4.	Swimming 50 yds/min.	500 cals./hr		
5.	Tennis-singles	400 cals./hr		
6.	Walking 2 mph	240 cals./hr		
7.	Walking 3 mph	320 cals./hr		
8.	Walking 4 1/2 mph	440 cals./hr		

Consumer Mathematics

Excercising to Lose Weight

EXAMPLE Each extra pound in a person's body contains about 3,500 calories. One way to lose a pound is to exercise enough to burn 3,500 calories. Ricardo swims for 2 hours. How much weight does he lose? Use the chart to find the number of calories used in 1 hour.

Calories Used in One Hour	
Activity	Calories
Tennis	500
Bicycling	500
Golf	350
Swimming	500
Walking	300
Running	700
Heavy exercise	1,200

Step 1

$$\begin{array}{r} 500 \\ \times \quad 2 \\ \hline 1,000 \end{array}$$ Calories
Hours
Total calories used

Step 2

$$\frac{1,000}{3,500} = \frac{10}{35} = \frac{2}{7}$$

Ricardo loses $\frac{2}{7}$ pound.

Directions Use the chart to compute how much weight each person loses. Simplify your answers.

Daily Exercise   **Weight Loss**

1. Abdul plays golf for 4 hours.   _____

2. Maria swims for 3 hours.   _____

3. Millard plays tennis for 6 hours.   _____

4. Racquel walks for 6 hours.   _____

5. Rudy bikes for 3 hours.   _____

6. Nikki runs for 2 hours.   _____

Directions Change each answer to a mixed number in lowest terms.

Monthly Exercise   **Weight Loss**

1. Brandon runs for 11 hours.   _____

2. Suki plays tennis for 31 hours.   _____

3. Robert walks for 77 hours.   _____

4. LaToya does 21 hours of heavy exercise. _____

5. Christen bikes for 18 hours.   _____

6. Shiro swims for 42 hours.   _____

Consumer Mathematics

Multiplication of Fractions

EXAMPLE $\frac{2}{5} \times \frac{10}{13} = \frac{20}{65} = \frac{4}{13}$ $\dfrac{\text{numerator times numerator}}{\text{denominator times denominator}}$

OR $\frac{2}{\cancel{5}_1} \times \frac{\cancel{10}^2}{13} = \frac{4}{13}$ Because $\frac{10}{5} = \frac{2}{1}$

EXAMPLE $2\frac{1}{2} \times 2\frac{2}{3} =$

$\frac{5}{\cancel{2}_1} \times \frac{\cancel{8}^4}{3} = \frac{20}{3} = 6\frac{2}{3}$ Because $\frac{8}{2} = \frac{4}{1}$

Directions   Multiply. Simplify your answers.

1. $\frac{5}{6} \times \frac{2}{3} =$ **8.** $\frac{9}{10} \times \frac{5}{18} =$ **15.** $2\frac{3}{5} \times 1\frac{2}{7} =$ **22.** $\frac{2}{3} \times \frac{5}{1} =$

2. $\frac{4}{5} \times \frac{3}{4} =$ **9.** $2\frac{1}{2} \times \frac{4}{5} =$ **16.** $3\frac{2}{5} \times \frac{15}{17} =$ **23.** $3\frac{1}{2} \times \frac{6}{1} =$

3. $\frac{7}{8} \times \frac{5}{14} =$ **10.** $3\frac{2}{3} \times \frac{3}{5} =$ **17.** $4\frac{3}{4} \times \frac{4}{5} =$ **24.** $4\frac{3}{5} \times 5 =$

4. $\frac{3}{8} \times \frac{10}{12} =$ **11.** $\frac{2}{7} \times 3\frac{1}{4} =$ **18.** $2\frac{3}{7} \times \frac{2}{17} =$ **25.** $7\frac{1}{2} \times 3\frac{1}{2} =$

5. $\frac{7}{13} \times \frac{2}{7} =$ **12.** $\frac{4}{8} \times 1\frac{1}{9} =$ **19.** $5\frac{2}{7} \times \frac{1}{7} =$ **26.** $4\frac{2}{5} \times 1\frac{2}{3} =$

6. $\frac{3}{11} \times \frac{22}{24} =$ **13.** $1\frac{1}{5} \times 2\frac{2}{3} =$ **20.** $10\frac{2}{3} \times \frac{15}{16} =$ **27.** $4\frac{1}{5} \times \frac{1}{2} =$

7. $\frac{6}{13} \times \frac{5}{12} =$ **14.** $1\frac{1}{6} \times 2\frac{1}{3} =$ **21.** $3\frac{1}{7} \times 1\frac{7}{11} =$ **28.** $30\frac{1}{2} \times \frac{2}{3} =$

     Consumer Mathematics

Meal Preparation Time

EXAMPLE   Elijah wants to make a turkey. He plans 35 minutes to prepare the stuffing and to stuff the bird. It must cook 25 minutes per pound and it weighs 13 lb 14 oz. After it roasts, the turkey must stand 25 minutes before carving. Carving should take about 15 minutes. How much time should Elijah allow to prepare the turkey?

Step 1 Find the weight of the bird in lb
Convert oz to lb

$$14 \text{ oz} = \frac{14}{16} \text{ lb}$$
$$= \frac{7}{8} \text{ lb}$$
$$= .875 \text{ lb}$$

Add .875 lb to 13 lb

The turkey weighs 13.875 lb

Step 3 Find the total minutes required.
        35 minutes for stuffing
    5 hours 47 minutes roasting
        25 minutes standing
    + 15 minutes carving
    5 hours 122 minutes

Rename 122 minutes to 2 hours 2 minutes

5 hours + 2 hours 2 minutes = 7 hours 2 minutes.

Step 2 Find the roasting time required. Multiply the weight by cooking time per pound.

```
      13.875  weight
  ×      25  minutes per pound
  346.875  ≈ 347 minutes
```

Divide by 60 minutes per hour

```
        5 hours
  60) 347
      300
       47 minutes left over
```

Elijah should allow about 7 hours to prepare the turkey.

Directions Find the cooking times below.

	Weight of Roast	Roasting Time	Preparation and Standing Time	Total Time Required
1.	4 lb	25 minutes per lb	35 minutes	
2.	4 lb 8 oz	15 minutes per lb	1 hour 10 minutes	
3.	3 lb 5 oz	20 minutes per lb	25 minutes	
4.	2.41 lb	18 minutes per lb	15 minutes	
5.	1.43 lb	25 minutes per lb	28 minutes	
6.	12 lb 9 oz	15 minutes per lb	1 hour 45 minutes	
7.	6 lb 4 oz	35 minutes per lb	35 minutes	
8.	3.78 lb	20 minutes per lb	45 minute	

Consumer Mathematics

Solving for the Base

EXAMPLE rate   base   percentage

24% of what number is 12.96?

$$0.24 \times N = 12.96$$
$$N = 12.96 \div 0.24$$
$$N = 54$$

Step 1 Write the rate as a decimal.
Step 2 Divide the percentage by the rate.
Step 3 Round the quotient if required.

EXAMPLE 2.7% of what number is 102?
(Round to the nearest whole number.)

$$0.027 \times N = 102$$
$$N = 102 \div 0.027$$
$$N = 3,778$$

$$0.027 \overline{)102.0000} \quad \frac{3777.7}{}$$

Directions Solve for the base. Rounding is not needed.

1. 12% of what number is 18? _____

2. 6% of what number is 7.2? _____

3. 10% of what number is 17.5? _____

4. 2.8% of what number is 2.8? _____

5. 8.3% of what number is 0.747? _____

6. 7% of what number is 1.4? _____

7. 4% of what number is 3.68? _____

8. 88% of what number is 95.04? _____

9. 6.2% of what number is 0.434? _____

10. 1.4% of what number is 1.022? _____

Directions Solve for the base. Round the base to the nearest
whole number.

1. 7% of what number is 67? _____

2. 39% of what number is 20? _____

3. 9.6% of what number is 80? _____

4. 48% of what number is 53.2? _____

5. 2% of what number is 60? _____

6. 86% of what number is 9? _____

7. 0.69% of what number is 2? _____

8. 7% of what number is 28? _____

9. 5% of what number is 5? _____

10. 4.2% of what number is 0.6? _____

Consumer Mathematics

Refunds for Repossessions

EXAMPLE Rebecca made total payments of $832 on a TV before it was repossessed. The resale price was $419. The original price was $1,200. The repossession and resale costs were $13 and $10. What was Rebecca's refund?

Total Payment $832	Resale Price $419	Original Price $1,200	Repossession and Resale Costs $13, $10

Step 1 $832
            + 419
            ——————
            $1,251

Step 2 $1,200
                 13
            +   10
            ——————
            $1,223

Step 3 $1,251
            −1,223
            ——————
            $ 28   Refund

Rebecca's refund was $28.00.

Directions Compute the refund for each of the following examples.

	Total Payment	Resale Price	Original Price	Repossession and Resale Costs	Refund
1.	$1,086	$619	$2,112	$11, $6	_____
2.	$1,507	$718	$1,772	$22, $9	_____
3.	$712	$256	$815	$18, $5	_____
4.	$814	$320	$945	$18, $9	_____
5.	$1,281	$418	$1,644	$13, $13	_____
6.	$763	$251	$965	$26, $7	_____
7.	$1,183	$542	$1,794	$17, $13	_____
8.	$466	$763	$943	$27, $5	_____
9.	$532	$203	$982	$10, $7	_____
10.	$948	$544	$1,850	$15, $11	_____
11.	$464	$246	$757	$20, $12	_____
12.	$1,803	$501	$2,298	$17, $12	_____

Consumer Mathematics

Total Payments for Purchases

EXAMPLE Larry financed $3,400 worth of furniture at 18% interest for 30 months. Find Larry's total payment.

Amount	Rate	Months
$3,400	18%	30

Step 1 Look in the table. The payment at 18% for 30 months is $4.17.

Step 2 Divide to find how many $100s are in $3,400.
$3,400 ÷ $100 = 34

Step 3
$4.17		Payment for $100
× 34		$100s in $3,400
$ 141.78		Payment for $3,400
$ 141.78		Monthly payment
× 30		Months
$4,253.40		Total payment

Larry's total payment is $4,253.40.

	Monthly Payments for Each $100 Financed					
Rate	12 Mo.	18 Mo.	24 Mo.	30 Mo.	36 Mo.	42 Mo.
4%	$8.52	$5.74	$4.35	$3.51	$2.96	$2.56
5%	$8.57	$5.78	$4.39	$3.56	$3.00	$2.61
6%	$8.61	$5.83	$4.44	$3.60	$3.05	$2.65
7%	$8.66	$5.87	$4.48	$3.65	$3.09	$2.70
8%	$8.70	$5.92	$4.53	$3.69	$3.14	$2.74
9%	$8.75	$5.96	$4.57	$3.74	$3.18	$2.79
10%	$8.80	$6.01	$4.62	$3.79	$3.23	$2.84
11%	$8.84	$6.06	$4.67	$3.83	$3.28	$2.88
12%	$8.89	$6.10	$4.71	$3.88	$3.33	$2.93
13%	$8.94	$6.15	$4.76	$3.93	$3.37	$2.98
14%	$8.98	$6.20	$4.81	$3.97	$3.42	$3.03
15%	$9.03	$6.24	$4.85	$4.02	$3.47	$3.08
16%	$9.08	$6.29	$4.90	$4.07	$3.52	$3.13
17%	$9.13	$6.34	$4.95	$4.12	$3.57	$3.18
18%	$9.17	$6.39	$5.00	$4.17	$3.62	$3.23
19%	$9.22	$6.43	$5.05	$4.22	$3.67	$3.28
20%	$9.27	$6.48	$5.09	$4.27	$3.72	$3.33
21%	$9.32	$6.53	$5.14	$4.32	$3.77	$3.39
22%	$9.36	$6.58	$5.19	$4.37	$3.82	$3.44
23%	$9.41	$6.63	$5.24	$4.42	$3.88	$3.49
24%	$9.46	$6.68	$5.29	$4.47	$3.93	$3.55
25%	$9.51	$6.72	$5.34	$4.52	$3.98	$3.60

Directions Find the total payment for each of the purchases below. Follow the example and use the amortization table.

	Amount	Rate	Months	Total Payment		Amount	Rate	Months	Total Payment
1.	$3,600	23%	36	_____	11.	$1,500	8%	36	_____
2.	$3,300	24%	30	_____	12.	$1,300	18%	12	_____
3.	$8,400	21%	42	_____	13.	$1,700	18%	18	_____
4.	$6,300	22%	24	_____	14.	$4,900	25%	24	_____
5.	$3,000	16%	24	_____	15.	$1,900	9%	12	_____
6.	$1,300	9%	42	_____	16.	$7,400	19%	30	_____
7.	$5,600	25%	36	_____	17.	$8,300	11%	42	_____
8.	$9,300	21%	18	_____	18.	$1,200	8%	42	_____
9.	$5,500	23%	18	_____	19.	$5,600	7%	30	_____
10.	$4,400	5%	42	_____	20.	$1,300	15%	42	_____

Consumer Mathematics

The Key to Area

EXAMPLE

Rectangle
Rule To find the area of a rectangle, multiply the length and width.

6"
3"
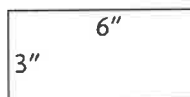
$A = l \times w = 6'' \times 3'' = 18$ square inches

Square
Rule To find the area of a square, square the side.

3"
3"

$A = s^2 = 3^2 = 3'' \times 3'' = 9$ square inches

Directions Draw the figures in the area provided or on grid paper. Then find the areas of the figures.

	Dimensions	**Draw Figures**	**Area of Figures**
1.	$l = 5''\ w = 4''$		
2.	$l = 6''\ w = 1''$		
3.	$l = 3'\ w = 2'$		
4.	$l = 29''\ w = 12''$		
5.	$l = 53'\ w = 41'$		
6.	$s = 2''$		
7.	$s = 7''$		
8.	$s = 11''$		
9.	$s = 9''$		
10.	$s = 38'$		
11.	$l = 3''\ w = 5''$		
12.	$l = 1''\ w = 4''$		
13.	$l = 7'\ w = 3'$		
14.	$l = 27''\ w = 11''$		
15.	$l = 36'\ w = 40'$		
16.	$s = 6''$		

Consumer Mathematics

Review of Basic Operations with Whole Numbers

1. $25 + 341 =$ _____

2. $304 \times 23 =$ _____

3. $1{,}002 - 384 =$ _____

4. $26{,}261 \div 25 =$ _____

5. $3{,}020 \times 105 =$ _____

6. $80{,}345 - 2{,}934 =$ _____

7. $7{,}022 \div 68 =$ _____

8. $8{,}054 \times 112 =$ _____

9. $55{,}067 + 399 + 944 =$ _____

10. $49{,}322 \div 33 =$ _____

11. $49{,}338 - 9{,}442 =$ _____

12. $38 + 12 - 19 =$ _____

13. $9{,}122 \div 8 =$ _____

14. $30{,}091 - 28{,}949 =$ _____

15. $7{,}456 - 234 + 283 =$ _____

16. $801 \times 20 \div 10 =$ _____

17. $288 + 942 + 9{,}511 =$ _____

18. $40{,}013 - 23{,}471 =$ _____

19. $674 + 85 - 495 =$ _____

20. $98{,}003 - 83{,}741 =$ _____

21. $40{,}591 \div 3 =$ _____

22. $5{,}900 \times 400 =$ _____

23. $10{,}384 \times 200 =$ _____

24. $40{,}513 \div 39 =$ _____

25. $8{,}371 - 578 =$ _____

26. $56{,}571 \div 65 =$ _____

27. $4 + 23 + 405 + 933 =$ _____

28. $37 \times 14 \times 35 =$ _____

29. $9{,}832 + 293 + 39{,}441 =$ _____

30. $5{,}761 + 384 - 481 =$ _____

31. $304 + 35 - 27 + 83 =$ _____

32. $144{,}144 \div 36 =$ _____

33. $80{,}028 - 29{,}388 =$ _____

34. $60{,}021 \times 847 =$ _____

35. $102{,}283 - 23{,}384 =$ _____

36. $302 \times 21 \div 9 =$ _____

37. $11{,}028 - 983 =$ _____

38. $42 + 6 + 81 + 923 =$ _____

39. $90{,}000 \div 100 =$ _____

40. $499 + 76 + 22 - 274 =$ _____

41. $30{,}022 \div 29 =$ _____

42. $5{,}058 \times 501 =$ _____

43. $58{,}007 \div 12 =$ _____

44. $40{,}596 + 293 + 948 =$ _____

45. $40{,}591 - 2{,}935 + 47{,}501 =$ _____

46. $846{,}102 \div 14 =$ _____

47. $875 + 4{,}059 + 2{,}374 =$ _____

48. $60{,}900 \div 5{,}002 =$ _____

Buying Paint

EXAMPLE April is at the hardware store and must decide whether to buy paint in 11 individual quart cans or to buy it in both gallon and quart cans. Here are the facts:

4 quarts = 1 gallon
1 quart costs $4.39
1 gallon costs $13.99

What should April do?

Step 1 Find the cost of 4 quarts.

$4.39
× 11
‾‾‾‾‾‾
$48.29

Step 2 Find out how many gallons to buy.

2 Gallons
4)‾11‾
− 8
‾‾‾‾
3 Quarts

Two gallons and 3 quarts are equal to 11 quarts.

Step 3 Find the cost.

$13.99 Cost per gallon
× 2
‾‾‾‾‾‾
$27.98 Cost of 2 gallons

$4.39 Cost per quart
× 3
‾‾‾‾‾‾
$13.17 Cost of 3 quarts

$27.98 Cost of 2 gallons
+ 13.17 Cost of 3 quarts
‾‾‾‾‾‾
$41.15 Total cost

April should buy 2 gallons and 3 quarts.

Directions Complete this chart.

Remember: 1 gallon costs $13.99 and 1 quart costs $4.39.

	Quarts Required	Amount to Buy		Cost		Total
		Gallons	**Quarts**	**Gallons**	**Quarts**	
1.	9					
2.	20					
3.	26					
4.	17					
5.	7					
6.	50					
7.	33					
8.	47					
9.	38					
10.	3					

Consumer Mathematics