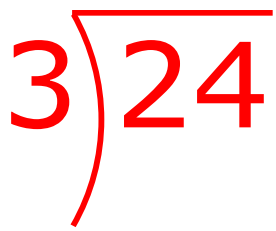


Name: _____

Foundational Numeracy

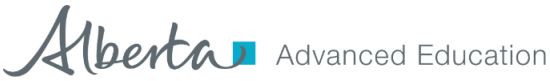
Module 3: Multiplying and Dividing Whole Numbers

Solutions Guide

V 1.20 - July 2020

Developed for Alberta's Community Adult Learning Program

Funded by Alberta Advanced Education



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Exercise 1.1

Multiplying One-Digit Numbers

Use your multiplication table to check your answers.

1. 5 × 3 = **15**	2. 8 × 3 = **24**	3. 2 × 5 = **10**	4. 9 × 6 = **54**	5. 7 × 9 = **63**
6. 4 × 3 = **12**	7. 6 × 7 = **42**	8. 3 × 6 = **18**	9. 1 × 1 = **1**	10. 0 × 8 = **0**
11. 9 × 7 = **63**	12. 7 × 6 = **42**	13. 4 × 3 = **12**	14. 5 × 8 = **40**	15. 8 × 2 = **16**
16. 6 × 4 = **24**	17. 8 × 5 = **40**	18. 9 × 9 = **81**	19. 2 × 9 = **18**	20. 3 × 5 = **15**
21. 8 × 2 = **16**	22. 2 × 9 = **18**	23. 7 × 7 = **49**	24. 9 × 3 = **27**	25. 4 × 6 = **24**
26. 3 × 5 = **15**	27. 6 × 8 = **48**	28. 5 × 6 = **30**	29. 7 × 5 = **35**	30. 8 × 4 = **32**
31. 4 × 8 = **32**	32. 8 × 7 = **56**	33. 6 × 9 = **54**	34. 7 × 4 = **28**	35. 9 × 5 = **45**
36. 8 × 4 = **32**	37. 7 × 9 = **63**	38. 5 × 3 = **15**	39. 3 × 6 = **18**	40. 2 × 2 = **4**
41. 7 × 4 = **28**	42. 3 × 3 = **9**	43. 2 × 7 = **14**	44. 8 × 9 = **72**	45. 6 × 8 = **48**
46. 9 × 8 = **72**	47. 8 × 6 = **48**	48. 4 × 5 = **20**	49. 2 × 7 = **14**	50. 5 × 2 = **10**

51. 7 × 6 = **42**	52. 2 × 4 = **8**	53. 5 × 6 = **30**	54. 3 × 2 = **6**	55. 7 × 3 = **21**
56. 9 × 7 = **63**	57. 6 × 6 = **36**	58. 8 × 8 = **64**	59. 4 × 9 = **36**	60. 2 × 5 = **10**
61. 5 × 4 = **20**	62. 7 × 2 = **14**	63. 6 × 5 = **30**	64. 6 × 9 = **54**	65. 4 × 4 = **16**
66. 8 × 3 = **24**	67. 1 × 8 = **8**	68. 3 × 7 = **21**	69. 9 × 3 = **27**	70. 4 × 6 = **24**
71. 8 × 6 = **48**	72. 3 × 9 = **27**	73. 9 × 4 = **36**	74. 6 × 2 = **12**	75. 5 × 5 = **25**
76. 2 × 6 = **12**	77. 5 × 3 = **15**	78. 4 × 8 = **32**	79. 7 × 8 = **56**	80. 2 × 7 = **14**
81. 5 × 4 = **20**	82. 8 × 5 = **40**	83. 2 × 8 = **16**	84. 6 × 6 = **36**	85. 2 × 3 = **6**
86. 4 × 7 = **28**	87. 7 × 6 = **42**	88. 9 × 2 = **18**	89. 3 × 4 = **12**	90. 5 × 9 = **45**
91. 7 × 5 = **35**	92. 3 × 8 = **24**	93. 3 × 4 = **12**	94. 7 × 8 = **56**	95. 2 × 6 = **12**
96. 7 × 9 = **63**	97. 8 × 3 = **24**	98. 6 × 3 = **18**	99. 5 × 7 = **35**	100. 9 × 4 = **36**

Exercise 1.2

Multiplying Three Numbers

Note you can multiply the numbers in any order. You can look for two that you find easiest first and then multiply the product with the third number.

1. $2 \times 3 \times 1$
   6

2. $2 \times 4 \times 3$
   24

3. $3 \times 2 \times 4$
   24

4. $2 \times 4 \times 5$
   40

5. $3 \times 2 \times 5$
   30

6. $4 \times 4 \times 5$
   80

7. $3 \times 4 \times 5$
   60

8. $3 \times 6 \times 5$
   90

9. $9 \times 2 \times 2$
   36

10. $2 \times 7 \times 3$
    42

11. $6 \times 2 \times 5$
    60

12. $7 \times 2 \times 5$
    70

13. $2 \times 9 \times 5$
    90

14. $8 \times 3 \times 5$
    120

15. $6 \times 5 \times 5$
    150

16. $2 \times 4 \times 7$
    56

17. $9 \times 2 \times 4$
    72

18. $3 \times 6 \times 4$
    72

19. $6 \times 7 \times 5$
    210

20. $8 \times 6 \times 5$
    480

Exercise 1.3

1. 2 × 10 =
2 x 1= 2 =20
Add as many zeros as in the question

2. 5 × 100 =
500

3. 8 × 1 000 =
8 000

4. 9 × 100 =
900

5. 6 × 1 000 =
6 000

6. 1 × 100 =
100

7. 5 × 1 000 =
5 000

8. 7 × 10 =
70

9. 8 × 100 =
800

10. 4 × 100 =
400

11. 6 × 1 000 =
6 000

12. 2 × 1 000 =
2 000

13. 6 × 100 =
600

14. 3 × 1 000 =
3 000

15. 9 × 10 =
90

Student Example 3

Multiply: 6 × 37 =

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https://youtu.be/SfxULALs_u8

Exercise 1.4

Solve the following. Use front-end rounding for the estimates.

	Estimate	Actual
1. 24 × 3	20 × 3 60	$\overset{1}{2}4$ × 3 72
2. 46 × 2	50 × 2 100	$\overset{1}{4}6$ × 2 92
3. 17 × 4	20 × 4 80	$\overset{2}{1}7$ × 4 68
4. 18 × 9	20 × 9 180	$\overset{7}{1}8$ × 9 162
5. 14 × 5	10 × 5 50	$\overset{2}{1}4$ × 5 70

	Estimate	Actual
6. 32 × 6	30 × 6 180	$\overset{1}{3}2$ × 6 192
7. 45 × 7	50 × 7 350	$\overset{3}{4}5$ × 7 315
8. 33 × 8	30 × 8 240	$\overset{2}{3}3$ × 8 264
9. 67 × 3	70 × 3 210	$\overset{2}{6}7$ × 3 201
10. 78 × 6	80 × 6 480	$\overset{4}{7}8$ × 6 468
11. 59 × 4	60 × 4 240	$\overset{3}{5}9$ × 4 236
12. 72 × 5	70 × 5 350	$\overset{1}{7}2$ × 5 360
13. 53 × 8	50 × 8 400	$\overset{2}{5}3$ × 8 424

	Estimate	Actual
14. 29 × 3	30 × 3 90	$\overset{2}{2}9$ × 3 87
15. 38 × 6	40 × 6 240	$\overset{4}{3}8$ × 6 288
16. 341 × 7	300 × 7 2100	$\overset{2}{3}41$ × 7 2387
17. 576 × 8	600 × 8 4800	$\overset{6\ 4}{5}76$ × 8 4608
18. 867 × 6	900 × 6 5400	$\overset{4\ 4}{8}67$ × 6 5202
19. 333 × 5	300 × 5 1500	$\overset{1\ 1}{3}33$ × 5 1665

	Estimate	Actual
20. 230 × 4	200 × 4 800	$\overset{1}{2}30$ × 4 920
21. 468 × 3	500 × 3 1500	$\overset{2\ 2}{4}68$ × 3 1404
22. 748 × 2	700 × 2 1400	$7\overset{1}{4}8$ × 2 1496
23. 203 × 2	200 × 2 400	203 × 2 406
24. 405 × 5	400 × 5 2000	$4\overset{2}{0}5$ × 5 2025
25. 527 × 7	500 × 7 3500	$\overset{1\ 4}{5}27$ × 7 3689

	Estimate	Actual
26. 748 × 9	700 × 9 6300	$^{4\ 7}$748 × 9 6732
27. 843 × 6	800 × 6 4800	$^{2\ 1}$843 × 6 5058
28. 699 × 8	700 × 8 5600	$^{7\ 7}$699 × 8 5592
29. 2 804 × 6	3000 × 6 18000	$^{4\ 2}$2804 × 6 16824
30. 1 704 × 9	2000 × 9 18000	$^{6\ 3}$1704 × 9 15336

Student Example 3

Multiply: 36 × 27

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https://youtu.be/DaQlieZH1kk

Student Example 4

Multiply: 324 × 46

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https://youtu.be/RVYwunbpMHA
Watch from 2:15

Exercise 1.5

	Estimate	Actual
1. 38 × 23	40 × 20 800	$\overset{1}{2}$ 38 × 23 114 760 874
2. 54 × 39	50 × 40 2000	$\overset{1}{3}$ 54 × 39 $\overset{1}{}$ 486 $\overset{1}{}$ 1620 2106

	Estimate	Actual
3. 22 × 16	$\begin{array}{r} 20 \\ \times\ 20 \\ \hline 400 \end{array}$	$\begin{array}{r} {\scriptstyle 1} \\ 22 \\ \times\ 16 \\ \hline 132 \\ 220 \\ \hline 352 \end{array}$
4. 36 × 25	$\begin{array}{r} 40 \\ \times\ 30 \\ \hline 1200 \end{array}$	$\begin{array}{r} {\scriptstyle 1\ 3} \\ 36 \\ \times\ 25 \\ \hline {\scriptstyle 1} \\ 180 \\ 720 \\ \hline 900 \end{array}$
5. 75 × 44	$\begin{array}{r} 80 \\ \times\ 40 \\ \hline 3200 \end{array}$	$\begin{array}{r} {\scriptstyle 2\ 2} \\ 75 \\ \times\ 44 \\ \hline 300 \\ 3000 \\ \hline 3300 \end{array}$
6. 29 × 53	$\begin{array}{r} 30 \\ \times\ 50 \\ \hline 1500 \end{array}$	$\begin{array}{r} {\scriptstyle 4\ 2} \\ 29 \\ \times\ 53 \\ \hline 87 \\ {\scriptstyle 1} \\ 1450 \\ \hline 1537 \end{array}$

	Estimate	Actual
7. 51 × 57	50 × 60 3000	51 × 57 1 357 2550 2907
8. 64 × 27	60 × 30 1800	2 64 × 27 1 448 1280 1728
9. 37 × 83	40 × 80 3200	5 2 37 × 83 111 1 2960 3071
10. 92 × 36	90 × 40 3600	1 92 × 36 552 1 2760 3071

	Estimate	Actual
11. 47 × 34	50 × 30 1500	$\overset{2}{\overset{2}{4}}7$ × 34 188 1410 1598
12. 58 × 35	60 × 40 2400	$\overset{2}{\overset{4}{5}}8$ × 35 $\overset{1}{2}90$ $\overset{1}{1}740$ 2030
13. 312 × 37	3000 × 40 12000	$\overset{1}{3}12$ × 37 $\overset{1}{2}184$ 9360 11544
14. 57 × 225	200 × 60 12000	$\overset{1}{\overset{1}{2}}\overset{2}{3}25$ × 57 $\overset{1}{1}575$ 11250 12825

	Estimate	Actual
15. 12 × 205	200 × 10 2000	$\overset{1}{2}05$ × 12 410 2050 2460
16. 374 × 83	400 × 80 32000	$\overset{5\ 3}{\overset{2\ 1}{3}}74$ × 83 $\overset{1}{1}122$ $\overset{1}{2}9920$ 31042
17. 543 × 78	500 × 80 40000	$\overset{3\ 2}{\overset{3\ 2}{5}}43$ × 78 4344 $\overset{1}{3}8010$ 42354
18. 692 × 65	700 × 70 49000	$\overset{5\ 1}{\overset{4\ 1}{6}}92$ × 65 2460 41520 43982

19. A car can travel 14 kilometres on 1 litre of gas. If the car's gas tank holds 45 litres, how far could this car travel on a full tank?

estimate

$$\begin{array}{r} 50 \\ \times\ 10 \\ \hline 500 \end{array}$$

actual

$$\begin{array}{r} {\scriptstyle 2} \\ 45 \\ \times\ 14 \\ \hline 180 \\ 450 \\ \hline 530 \end{array}$$

The car can travel 530 kilometres on 14 litres of gas.

20. A can of pop holds 355 millilitres. How many millilitres of pop are there in a flat of 24 cans?

estimate

$$\begin{array}{r} 400 \\ \times\ 20 \\ \hline 8000 \end{array}$$

actual

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ {\scriptstyle 2\ 2} \\ 355 \\ \times\ 24 \\ \hline 1420 \\ 7100 \\ \hline 8520 \end{array}$$

There are 8 520 millilitres in a flat of 24 cans.

Exercise 2.1

1. $9\overline{)36}$	2. $6\overline{)48}$	3. $3\overline{)15}$	4. $7\overline{)35}$	5. $8\overline{)56}$
4	**8**	**5**	**5**	**7**
6. $4\overline{)28}$	7. $2\overline{)8}$	8. $5\overline{)20}$	9. $3\overline{)27}$	10. $6\overline{)36}$
7	**4**	**4**	**9**	**6**
11. $7\overline{)63}$	12. $8\overline{)16}$	13. $9\overline{)45}$	14. $2\overline{)18}$	15. $5\overline{)25}$
9	**2**	**5**	**9**	**5**
16. $9\overline{)27}$	17. $6\overline{)18}$	18. $9\overline{)81}$	19. $7\overline{)14}$	20. $6\overline{)42}$
3	**3**	**9**	**2**	**7**
21. $9\overline{)54}$	22. $4\overline{)32}$	23. $3\overline{)9}$	24. $8\overline{)40}$	25. $7\overline{)56}$
6	**8**	**3**	**5**	**8**
26. $7\overline{)21}$	27. $3\overline{)18}$	28. $4\overline{)16}$	29. $8\overline{)72}$	30. $4\overline{)20}$
3	**6**	**4**	**9**	**5**
31. $6\overline{)42}$	32. $5\overline{)15}$	33. $3\overline{)24}$	34. $5\overline{)35}$	35. $7\overline{)49}$
7	**3**	**8**	**7**	**7**
36. $2\overline{)12}$	37. $3\overline{)21}$	38. $8\overline{)64}$	39. $4\overline{)24}$	40. $7\overline{)42}$
6	**7**	**8**	**6**	**6**
41. $4\overline{)36}$	42. $8\overline{)48}$	43. $6\overline{)30}$	44. $3\overline{)12}$	45. $5\overline{)45}$
9	**6**	**5**	**4**	**9**
46. $9\overline{)18}$	47. $5\overline{)40}$	48. $8\overline{)24}$	49. $8\overline{)40}$	50. $7\overline{)28}$
2	**8**	**3**	**5**	**4**

Student Example 3

Divide: 2 292 ÷ 4

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https://youtu.be/NcADzGz3bSI
Video for examples 3 and 4

Student Example 4

Divide: 6 475 ÷ 7

Exercise 2.2

Solve the following.

1. $4\overline{)15}$ **3 r3**
   -12
   3

2. $7\overline{)20}$ **2 r6**
   -14
   6

3. $5\overline{)24}$ **4 r4**
   -20
   4

4. $8\overline{)42}$ **5 r2**
   -40
   2

5. $9\overline{)64}$ **7 r1**
   -63
   1

6. $6\overline{)50}$ **8 r2**
   -48
   2

7. $4\overline{)51}$ **12 r3**
   $-4\downarrow$
   11
   -8
   3

8. $5\overline{)46}$ **9 r1**
   -45
   1

9. $6\overline{)93}$ **15 r3**

$$\begin{array}{r} 15 \\ 6\overline{)93} \\ -6\downarrow \\ \hline 33 \\ -30 \\ \hline 3 \end{array}$$

10. $5\overline{)96}$ **19 r1**

$$\begin{array}{r} 19 \\ 5\overline{)96} \\ -5\downarrow \\ \hline 46 \\ -45 \\ \hline 1 \end{array}$$

11. $3\overline{)41}$ **13 r2**

$$\begin{array}{r} 13 \\ 3\overline{)41} \\ -3\downarrow \\ \hline 11 \\ -9 \\ \hline 2 \end{array}$$

12. $4\overline{)59}$ **14 r3**

$$\begin{array}{r} 14 \\ 4\overline{)59} \\ -4\downarrow \\ \hline 19 \\ -16 \\ \hline 3 \end{array}$$

13. $2\overline{)21}$ **10 r1**

$$\begin{array}{r} 10 \\ 2\overline{)21} \\ -2\downarrow \\ \hline 01 \\ -0 \\ \hline 1 \end{array}$$

14. $3\overline{)32}$ **10 r2**

$$\begin{array}{r} 10 \\ 3\overline{)32} \\ -3\downarrow \\ \hline 02 \\ -0 \\ \hline 2 \end{array}$$

15. $3\overline{)164}$ **54 r2**

$$\begin{array}{r} 54 \\ 3\overline{)164} \\ -15\downarrow \\ \hline 14 \\ -12 \\ \hline 2 \end{array}$$

16. $5\overline{)112}$ **22 r2**

$$\begin{array}{r} 22 \\ 5\overline{)112} \\ -10\downarrow \\ \hline 12 \\ -10 \\ \hline 2 \end{array}$$

17. $152 \div 6$ **25 r2**

$$\begin{array}{r} 25 \\ 6\overline{)152} \\ -12\downarrow \\ \hline 32 \\ -30 \\ \hline 2 \end{array}$$

18. $7\overline{)130}$ **18 r4**

$$\begin{array}{r} 18 \\ 7\overline{)130} \\ -7\downarrow \\ \hline 60 \\ -56 \\ \hline 4 \end{array}$$

19. $281 \div 9$ **31 r2**

$$\begin{array}{r} 31 \\ 9\overline{)281} \\ -27\downarrow \\ \hline 11 \\ -9 \\ \hline 2 \end{array}$$

20. $8\overline{)661}$ **82 r5**

$$\begin{array}{r} 82 \\ 8\overline{)661} \\ -64\downarrow \\ \hline 21 \\ -16 \\ \hline 5 \end{array}$$

21. $7\overline{)525}$ **75**

$$\begin{array}{r} 75 \\ 7\overline{)525} \\ -49\downarrow \\ \hline 35 \\ -\ 35 \\ \hline 0 \end{array}$$

22. $\frac{455}{5}$ $5\overline{)455}$ **91**

$$\begin{array}{r} 91 \\ 5\overline{)455} \\ -45\downarrow \\ \hline 05 \\ -\ 5 \\ \hline 0 \end{array}$$

23. $8\overline{)466}$ **58 r2**

$$\begin{array}{r} 58 \\ 8\overline{)466} \\ -40\downarrow \\ \hline 66 \\ -64 \\ \hline 2 \end{array}$$

24. $\frac{219}{9}$ $9\overline{)219}$ **24 r3**

$$\begin{array}{r} 24 \\ 9\overline{)219} \\ -18\downarrow \\ \hline 39 \\ -\ 36 \\ \hline 3 \end{array}$$

25. $7\overline{)3019}$ **431 r2**

$$\begin{array}{r} 431 \\ 7\overline{)3019} \\ -28\downarrow \\ \hline 21 \\ -21\downarrow \\ \hline 09 \\ -\ 7 \\ \hline 2 \end{array}$$

26. $\frac{1\,725}{2}$ $2\overline{)1725}$ **862 r1**

$$\begin{array}{r} 862 \\ 2\overline{)1725} \\ -16\downarrow \\ \hline 12 \\ -12\downarrow \\ \hline 05 \\ -\ 4 \\ \hline 1 \end{array}$$

27. $5\overline{)2906}$ **581 r1**

$$\begin{array}{r} 581 \\ 5\overline{)2906} \\ -25\downarrow \\ \hline 40 \\ -40\downarrow \\ \hline 06 \\ -\ 5 \\ \hline 1 \end{array}$$

28. $8\overline{)3848}$ **481**

$$\begin{array}{r} 481 \\ 8\overline{)3848} \\ -32\downarrow \\ \hline 64 \\ -64\downarrow \\ \hline 08 \\ -\ 8 \\ \hline 0 \end{array}$$

29. $4\overline{)2168}$ **542**

$$\begin{array}{r} 542 \\ 4\overline{)2168} \\ -20\downarrow \\ \hline 16 \\ -16\downarrow \\ \hline 08 \\ -\ 8 \\ \hline 0 \end{array}$$

30. $6\overline{)5949}$ **991 r3**

$$\begin{array}{r} 991 \\ 6\overline{)5949} \\ -54\downarrow \\ \hline 54 \\ -54\downarrow \\ \hline 09 \\ -\ 6 \\ \hline 3 \end{array}$$

31. Jenny can drive 624 kilometres in 8 hours. How far can she go in one hour?

$$\begin{array}{r} 78 \\ 8\overline{)624} \\ -56\downarrow \\ \hline 64 \\ -\ 64 \\ \hline 0 \end{array}$$

Jenny can go 78 Kilometres in one hour.

Student Example 3

Estimate the quotient: $7\overline{)286}$

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https://youtu.be/YLQBYDvVhIo

Video for examples 3 and 4

Student Example 4

Estimate the quotient: $5\overline{)3\ 427}$

Exercise 2.3

Estimate the quotient then solve to find the actual answer.

	Estimate	Actual
1. 906 ÷ 3 =	$3\overline{)900}$ → 300	$3\overline{)906}$ → 302; −9↓; 006; −6; 0
2. 550 ÷ 5 =	$5\overline{)500}$ → 100	$5\overline{)550}$ → 110; −5↓; 05; −5↓; 00

	Estimate	Actual
3. 613 ÷ 3 =	$3\overline{)600}$ = 200	$3\overline{)613}$ = 204 r1 − 6 ↓ ↓ 0 1 3 − 1 2 1
4. 615 ÷ 2 =	$2\overline{)600}$ = 300	$2\overline{)615}$ = 307 r1 − 6 ↓ ↓ 0 1 5 − 1 4 1
5. 834 ÷ 4 =	$4\overline{)800}$ = 200	$4\overline{)834}$ = 208 r2 − 8 ↓ ↓ 0 3 4 − 3 2 2
6. 761 ÷ 7 =	$7\overline{)700}$ = 100	$7\overline{)761}$ = 108 r5 − 7 ↓ ↓ 0 6 1 − 5 6 5

	Estimate	Actual
7. 4 680 ÷ 9 =	$9\overline{)4\,5\,0\,0}\;5\,0\,0$ Use 4500 rather than 4000 as 45 is a multiple of 9	$9\overline{)4\,6\,8\,0}\;5\,2\,0$ $-4\,5\downarrow$ $1\,8$ $-1\,8\downarrow$ $0\,0$ $-\;5$ 1
8. 4 906 ÷ 7 =	$7\overline{)4\,9\,0\,0}\;7\,0\,0$	$7\overline{)4\,9\,0\,6}\;7\,2\,0$ $-4\,9\downarrow\downarrow$ $0\,0\,6$ -0 6 $-\;5$ 1
9. 4 832 ÷ 8 =	$8\overline{)4\,8\,0\,0}\;6\,0\,0$	$8\overline{)4\,8\,3\,2}\;6\,0\,4$ $-4\,8\downarrow\downarrow$ $0\,3\,2$ $-3\,2$ 0 $-\;5$ 1
10. 9 138 ÷ 7 =	$7\overline{)7\,0\,0\,0}\;1\,0\,0\,0$	$7\overline{)9\,1\,3\,8}\;1\,3\,0\,5$ $-7\downarrow$ $2\,1\,3$ $-2\,1\downarrow\downarrow$ $0\,3\,8$ $-\;3\,5$ 3

	Estimate	Actual
11. 8 427 ÷ 6 =	$6\overline{)6000}$ = 1000	$6\overline{)8427}$ = 1404 R 3
12. 3 047 ÷ 5 =	$5\overline{)3000}$ = 600	$5\overline{)3047}$ = 609 R 2
13. 8 008 ÷ 4 =	$4\overline{)8000}$ = 2000	$4\overline{)8008}$ = 2002
14. 1 922 ÷ 3 =	$3\overline{)1800}$ = 900	$3\overline{)1922}$ = 640 R 2

	Estimate	Actual
15. 3 524 ÷ 5 =	$\begin{array}{r} 700 \\ 5\overline{)3500} \end{array}$	$\begin{array}{r} 704 \\ 5\overline{)3524} \\ -35\downarrow\downarrow \\ \hline 024 \\ -20 \\ \hline 4 \\ -24 \\ \hline 3 \end{array}$
16. 9 060 ÷ 3 =	$\begin{array}{r} 3000 \\ 3\overline{)9000} \end{array}$	$\begin{array}{r} 3020 \\ 3\overline{)9060} \\ -95\downarrow\downarrow \\ \hline 006 \\ -6\downarrow \\ \hline 0 0 \\ -24 \\ \hline 3 \end{array}$
17. 7 270 ÷ 9 =	$\begin{array}{r} 800 \\ 9\overline{)7200} \end{array}$	$\begin{array}{r} 807 \\ 9\overline{)7270} \\ -72\downarrow\downarrow \\ \hline 070 \\ -63 \\ \hline 7 \\ -24 \\ \hline 3 \end{array}$
18. 29 608 ÷ 4 =	$\begin{array}{r} 7000 \\ 4\overline{)28000} \end{array}$	$\begin{array}{r} 7402 \\ 4\overline{)29608} \\ -28\downarrow\downarrow\downarrow \\ \hline 16 \\ -16\downarrow\downarrow \\ \hline 08 \\ -8 \\ \hline 0 \end{array}$

	Estimate	Actual
19. 54 544 ÷ 6 =	9 0 0 0 $6\overline{)54000}$	9 0 9 0 $6\overline{)54544}$ −5 4 ↓ ↓ ↓ 0 5 4 −5 4 ↓ 0 4
20. 28 215 ÷ 7 =	4 0 0 0 $7\overline{)28000}$	4 0 3 0 $7\overline{)28215}$ −2 8 ↓ ↓ ↓ 0 2 1 −2 1 ↓ 0 5

Exercise 2.4

Estimate then find the actual answer.

	Estimate	Actual
1. 78 ÷ 13 =	$10\overline{)80}$ = 8	$13\overline{)78}$ = 6
2. $\frac{85}{17}$	$20\overline{)80}$ = 4	$17\overline{)85}$ = 5
3. 264 ÷ 51	$50\overline{)250}$ = 5	$51\overline{)264}$ = 5

	Estimate	Actual
4. 672 ÷ 24	$20\overline{)600}$ → 30	$24\overline{)672}$ → 28; 48; 192; 192; 0
5. 187 ÷ 11	$10\overline{)200}$ → 20	$11\overline{)187}$ → 17; 11; 77; 77; 0
6. 330 ÷ 14	$10\overline{)300}$ → 30	$14\overline{)330}$ → 23; 28; 50; 42; 8
7. 806 ÷ 62	$60\overline{)600}$ → 10	$62\overline{)806}$ → 13; 62; 186; 186; 0

	Estimate	Actual
8. 576 ÷ 23	$\begin{array}{r} 30 \\ 20\overline{)600} \end{array}$	$\begin{array}{r} 25 \\ 23\overline{)576} \\ -46\downarrow \\ \hline 116 \\ -115 \\ \hline 1 \end{array}$
9. 768 ÷ 24	$\begin{array}{r} 40 \\ 20\overline{)800} \end{array}$	$\begin{array}{r} 32 \\ 24\overline{)768} \\ -72\downarrow \\ \hline 48 \\ -48 \\ \hline 0 \end{array}$
10. 903 ÷ 21	$\begin{array}{r} 40 \\ 20\overline{)800} \end{array}$	$\begin{array}{r} 43 \\ 21\overline{)903} \\ -84\downarrow \\ \hline 63 \\ -63 \\ \hline 0 \end{array}$
11. 293 ÷ 32	$\begin{array}{r} 10 \\ 30\overline{)300} \end{array}$	$\begin{array}{r} 9 \\ 32\overline{)293} \\ -288 \\ \hline 5 \end{array}$

	Estimate	Actual
12. 378 ÷ 63	6 6~~0~~) 36~~0~~	6 6(1)3) 3 7 8 −3 7 8 0
13. 694 ÷ 71	10 7~~0~~) 70~~0~~	9 7(1)1) 6 ~~9~~(8) (1)4 − 6 3 9 5 5
14. 387 ÷ 54	8 5~~0~~) 40~~0~~	7 5(2)4) 3 ~~8~~(7) (1)7 − 3 7 8 9
15. 654 ÷ 44	20 4~~0~~) 80~~0~~	1 4 4(1)4) 6 5 4 − 4 4 ↓ ~~2~~(1) ~~1~~(10) (1)4 1 7 6 3 8

	Estimate	Actual
16. 415 ÷ 62	7 6~~0~~) 42~~0~~	6 62) 415 – 372 43
17. 786 ÷ 24	40 2~~0~~) 80~~0~~	32 24) 786 – 72 ↓ 66 – 48 18
18. 849 ÷ 82	10 8~~0~~) 80~~0~~	10 82) 849 – 82 ↓ 29
19. 3 186 ÷ 74	40 7~~0~~) 280~~0~~	43 74) 3 186 –296 ↓ 226 –222 4

	Estimate	Actual
20. 2 406 ÷ 36	60 $4\not{0}\overline{)240\not{0}}$	6 6 36) 2 4 0 6 −2 1 6 ↓ 2 4 6 −2 1 6 3 0
21. 2 646 ÷ 33	90 $3\not{0}\overline{)270\not{0}}$	8 0 33) 2 6 4 6 −2 6 4 ↓ 0 6
22. 4 758 ÷ 64	80 $6\not{0}\overline{)480\not{0}}$	7 4 64) 4 7 5 8 −4 4 8 ↓ 2 7 8 −2 5 6 2 2
23. 3 999 ÷ 72	60 $7\not{0}\overline{)420\not{0}}$	5 5 72) 3 9 9 9 −3 6 0 ↓ 3 9 9 −3 6 0 3 9

	Estimate	Actual
24. 4 411 ÷ 93	$\begin{array}{r} 50 \\ 9\cancel{0}\overline{)450\cancel{0}} \end{array}$	$\begin{array}{r} \overset{2}{\overset{1}{9}}3\overline{)\begin{array}{r} 4\ 7 \\ \cancel{4}^{\cancel{3}}\ \cancel{4}^{\cancel{13}}\ {}^{1}1\ 1 \\ -3\ 7\ 2\ \downarrow \\ \hline 6\ 9\ 1 \\ -6\ 5\ 1 \\ \hline 4\ 0 \end{array}} \end{array}$
25. 2 797 ÷ 58	$\begin{array}{r} 50 \\ 6\cancel{0}\overline{)300\cancel{0}} \end{array}$	$\begin{array}{r} \overset{6}{\overset{3}{5}}8\overline{)\begin{array}{r} 4\ 8 \\ 2\ 7\ 9\ 7 \\ -2\ 3\ 2\ \downarrow \\ \hline 4\ 7\ 7 \\ -4\ 6\ 4 \\ \hline 1\ 3 \end{array}} \end{array}$
26. 3 606 ÷ 48	$\begin{array}{r} 70 \\ 5\cancel{0}\overline{)350\cancel{0}} \end{array}$	$\begin{array}{r} \overset{4}{\overset{5}{4}}8\overline{)\begin{array}{r} 7\ 5 \\ 3\ \cancel{6}^{\cancel{5}}\ {}^{1}0\ 6 \\ -3\ 3\ 6\ \downarrow \\ \hline 2\ 4\ 6 \\ -2\ 4\ 0 \\ \hline 6 \end{array}} \end{array}$
27. 7 070 ÷ 15	$\begin{array}{r} 400 \\ 2\cancel{0}\overline{)800\cancel{0}} \end{array}$	$\begin{array}{r} \overset{3}{\overset{2}{1}}5\overline{)\begin{array}{r} 4\ 7\ 1 \\ 7\ 0\ 7\ 0 \\ -\ 6\ 0\ \downarrow\ \downarrow \\ \hline 1\ 0\ 7 \\ -1\ 0\ 5\ \downarrow \\ \hline \cancel{2}^{\cancel{1}}\ {}^{1}0 \\ -1\ 5 \\ \hline 5 \end{array}} \end{array}$

	Estimate	Actual
28. 6 527 ÷ 25	$\begin{array}{r} 200 \\ 3\cancel{0}\overline{)600\cancel{0}} \end{array}$	$\begin{array}{r} {\scriptstyle 3\,1}\\ 25\overline{)\,6\;5\;2\;7} \\ -\,5\;0\;\downarrow\;\downarrow \\ \hline 1\;5\;2 \\ -1\;5\;0\;\downarrow \\ \hline 2\;7 \\ -2\;5 \\ \hline 2 \end{array}$
29. 57 033 ÷ 49	$\begin{array}{r} 1000 \\ 5\cancel{0}\overline{)5000\cancel{0}} \end{array}$	$\begin{array}{r} 1\;1\;6\;3 \\ {\scriptstyle 2\,5}\\ 49\overline{)\,\cancel{5}^{\,4}\,{}^{1}7\;0\;3\;3} \\ -\,4\;9\;\downarrow\;\downarrow\;\downarrow \\ \hline \cancel{8}^{\,7}\;{}^{1}0 \\ -4\;9\;\downarrow\;\downarrow \\ \hline \cancel{3}^{\,2}\;\cancel{1}^{\,10}\;{}^{1}3 \\ -\,2\;9\;4\;\downarrow \\ \hline 1\;\cancel{9}^{\,8}\;{}^{1}3 \\ -1\;4\;7 \\ \hline 4\;6 \end{array}$
30. 54 636 ÷ 12	$\begin{array}{r} 5000 \\ 1\cancel{0}\overline{)5000\cancel{0}} \end{array}$	$\begin{array}{r} 4\;5\;5\;3 \\ {\scriptstyle 2\,1}\\ 12\overline{)\,\cancel{5}^{\,4}\,{}^{1}4\;6\;3\;6} \\ -\,4\;8\;\downarrow\;\downarrow\;\downarrow \\ \hline 6\;6 \\ -6\;0\;\downarrow\;\downarrow \\ \hline 6\;3 \\ -\,6\;0\;\downarrow \\ \hline 3\;6 \\ -3\;6 \\ \hline 0 \end{array}$

31. Jenna buys a used car from the local car dealer for $7 560. She wants to pay it off in 2 years by making 24 equal monthly payments. How much will she pay each month?

estimate $\begin{array}{r} 400 \\ 2\cancel{0}\overline{)800\cancel{0}} \end{array}$ actual $\begin{array}{r} {\scriptstyle 2\,1}\\ 24\overline{)\;7\;5\;6\;0} \\ -\,7\;2\;\downarrow\;\downarrow \\ \hline 3\;6 \\ -2\;4\;\downarrow \\ \hline 1\;2\;0 \\ -1\;2\;0 \\ \hline 0 \end{array}$ Jenna will pay $315 per month.

Exercise 2.5

Solve the following word problems. Remember to write a statement.

1. Chris made $53 at his part time job every day for 3 weeks (21 days). How much money did he make in the three weeks?

estimate	$\begin{array}{r} 50 \\ \times\ 20 \\ \hline 1000 \end{array}$	actual	$\begin{array}{r} 53 \\ \times\ 21 \\ \hline 53 \\ 1060 \\ \hline 1113 \end{array}$	Chris will earn $1 113 in the three weeks.

2. Eight co-workers shared a lottery ticket that just won $30 192. If they split the money evenly, how much does each person get?

estimate	$8\overline{)32000}$ $\quad 4000$	actual	$8\overline{)30192}$ $\quad 3774$ -24 61 -56 59 -56 32 -32 0	Each person will receive $3 774.

3. Andrew earns $32 per hour. How much will he earn if he works 76 hours over the next two weeks?

estimate	$\begin{array}{r} 30 \\ \times\ 80 \\ \hline 2400 \end{array}$	actual	$\begin{array}{r} 76 \\ \times\ 32 \\ \hline 152 \\ 2280 \\ \hline 2432 \end{array}$	Andrew will earn $2 432 in 2 weeks.

4. Xu worked 36 hours and received $648 pay. What is her hourly wage?

estimate $\quad 4\cancel{0})\overline{80\cancel{0}} \quad 20$ $\qquad$ actual $\qquad 36\overline{)648} \quad 18$ $\qquad$ Xu's hourly wage is $18.

5. A can of pop contains 355 millilitres of pop. How many millilitres will be in 48 cans?

estimate	actual		
400 × 50 20000		2 2 4 4 355 × 48 1 2840 14200 17040	There is 17 040 millilitres in 48 cans of pop.

6. If a box contains 48 envelopes, how many envelopes would there be in 26 boxes?

estimate	actual		
50 × 30 1500		1 4 48 × 26 1 288 960 1248	There are 1 248 envelopes in 26 boxes.

7. A salesman traveled 2 075 kilometres in 5 days. If he drove the same distance each day, then how many kilometres did he travel each day?

estimate	actual		
400 5)2000		4 1 5 5) 2 0 7 5 −2 0 ↓ ↓ 0 7 − 5 ↓ 2 5 −2 5 0	The salesman drove 415 kilometres each day.

8. At a town hall meeting, there are 6 people who want to speak. The meeting is 88 minutes long. If you give all 6 people equal time, how much time will each speaker get? Will there be any time left over?

estimate	actual		
10 6)60		1 4 6) 8 8 −6 ↓ 2 8 −24 4	Each person will get 14 minutes to speak. There will be 4 minutes left over.

9. A passenger aircraft is flying at a speed of 670 km/hr (kilometres per hour). At this rate of speed, how many kilometers will the plane travel in 12 hours?

estimate	$700 \times 10 = 7000$	actual	$\begin{array}{r} {\scriptstyle 1}\\ 670 \\ \times\ 12 \\ \hline {\scriptstyle 1}\\ 1340 \\ +6700 \\ \hline 8040 \end{array}$	The plane will travel 8040 kilometres in 12 hours.

10. Jeremy walked 837 km in 27 days. Assuming he walked the same distance each day, then how many km did he walk each day?

estimate	$30 \overline{)900}$	actual	$\begin{array}{r} {\scriptstyle 2}\\ 27\overline{)\ 837} \\ -81\downarrow \\ \hline 27 \\ -27 \\ \hline 0 \end{array}$	Jeremy walked 31 kilometres each day

Exercise 2.6

1. Isabell has volunteered to bake desserts for her school bake sale. She baked 1 dozen (12) brownies and will sell them for $4 each. She also baked two dozen cupcakes and plans to sell them for $5 each. How much money will Isabell raise if she sells all of her baked goods?

estimate	$\begin{array}{r} 10 \\ \times\ 4 \\ \hline 40 \end{array}$ $\begin{array}{r} 20 \\ \times\ 5 \\ \hline 100 \end{array}$ 40 + 100 =140	actual	$\begin{array}{r} 12 \\ \times\ 4 \\ \hline 48 \end{array}$ $\begin{array}{r} {\scriptstyle 2}\,24 \\ \times\ 5 \\ \hline 120 \end{array}$ 48 + 120 = 168	Isabell will raise $168.

2. A group of six foreign language students plans a summer trip to Germany. The total cost of all six flights is $8 400. Each person will also pay $600 for the hotel. If all six students pay the same amount for the flight, what is the cost of the entire trip for each student, including the cost of the hotel?

estimate	$6\overline{)6000}$ 1000 1000 + 600 = 1600	actual	$6\overline{)8400}$ 1400 $-6\downarrow$ 24 -24 0 1400 + 600 =2 000	Each student will pay $2 000 for the trip.

3. A theatre in Edmonton holds 1 000 people. If the main floor has 24 rows of 30 seats each and the balcony has 14 rows. How many seats must be in each row in the balcony?

estimate	actual	floor	There are 20 seats in each row of the balcony.
$\begin{array}{r} 20 \\ \times\ 30 \\ \hline 600 \end{array}$ 1000-600=400 $10\overline{)400}$ → 40		$\begin{array}{r} {\scriptstyle 1}\,2\,4 \\ \times\ 30 \\ \hline 720 \end{array}$ 1000-720=280 $14\overline{)280}$ → 20 −28 0	

4. Brian and Tracy are saving money to split evenly between their three kids. If Brian saves $420 and Tracy saves $342, how much money will each child receive?

estimate	actual		Each child will get $253. There will be $1 left over.
$\begin{array}{r} 400 \\ +\ 300 \\ \hline 700 \end{array}$ $3\overline{)600}$ → 200		$\begin{array}{r} 420 \\ +\ 340 \\ \hline 760 \end{array}$ $3\overline{)760}$ → 253 −6 ↓ ↓ 16 −15 ↓ 10 −9 1	

5. Glen and his wife and two other couples go for dinner which cost $175, they went to the movie which cost $14 per person and paid $26 dollars to park. If the couples split the cost evenly, how much does each couple have to pay?

estimate	movie: $10 \times 6 = 60$ total cost: $200 + 60 + 20 = 280$ cost per couple $3\overline{)270}$ = 90	actual	movie: $\overset{2}{1}4 \times 6 = 84$ total cost: $\overset{1}{1}\overset{1}{7}5 + 84 + 26 = 285$ cost per couple $3\overline{)285}$ = 9 5 −2 7 ↓ 1 5 −1 5 0	Each couple will pay $95.

6. In the month of June, the Anderson family made four deposits of $1 782 each to their bank account. They also withdrew $5 931 for expenses. What was the account balance for the month of June, assuming they had nothing in the account at the start of the month?

estimate	$2000 \times 4 = 8000$ $8000 - 6000 = 2000$	actual	$\overset{3}{1}\overset{3}{7}82 \times 4 = 7128$ $\overset{6}{\not 7}\,\overset{10}{\not 1}\,{}^{1}2\,8 - 5\,9\,3\,1 = 1\,1\,9\,7$	The account balance for the month of June is $1 197.