

Grade 4 Advanced Workbook

24 lessons · printable · answer key at the back

Name _____

Date _____

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Place Value in Four-Digit Numbers

WORKED EXAMPLE

3546 → 40

1. The value of a digit

Write what the underlined digit is worth.

1 7264 → _____

2 8065 → _____

3 7476 → _____

4 4046 → _____

5 2258 → _____

6 9604 → _____

7 7902 → _____

8 4585 → _____

9 4014 → _____

10 6209 → _____

11 3522 → _____

12 4909 → _____

13 6507 → _____

14 3725 → _____

15 6046 → _____

16 7032 → _____

17 6313 → _____

18 9301 → _____

19 3054 → _____

20 6222 → _____

21 2804 → _____

22 3506 → _____

23 8406 → _____

24 7498 → _____

2. Writing expanded form

Write each number in expanded form.

25 8807 = _____

26 1691 = _____

27 3509 = _____

28 8104 = _____

29 1057 = _____

30 5767 = _____

31 2207 = _____

32 6049 = _____

33 6400 = _____

34 9609 = _____

35 9065 = _____

36 6267 = _____

37 3011 = _____

38 8023 = _____

39 4407 = _____

40 5072 = _____

41 2063 = _____

42 6048 = _____

43 1581 = _____

44 7104 = _____

45 2302 = _____

46 3019 = _____

47 8909 = _____

Rounding to the Nearest Ten

WORKED EXAMPLE

$$819 \approx \underline{820}$$

3. Rounding numbers

Round each number to the nearest 10.

- | | | | |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 1 713 $\approx$ _____ | 2 172 $\approx$ _____ | 3 72 $\approx$ _____ | 4 17 $\approx$ _____ |
| 5 947 $\approx$ _____ | 6 751 $\approx$ _____ | 7 74 $\approx$ _____ | 8 21 $\approx$ _____ |
| 9 305 $\approx$ _____ | 10 539 $\approx$ _____ | 11 531 $\approx$ _____ | 12 327 $\approx$ _____ |
| 13 303 $\approx$ _____ | 14 311 $\approx$ _____ | 15 82 $\approx$ _____ | 16 589 $\approx$ _____ |
| 17 639 $\approx$ _____ | 18 499 $\approx$ _____ | 19 716 $\approx$ _____ | 20 675 $\approx$ _____ |
| 21 491 $\approx$ _____ | 22 542 $\approx$ _____ | 23 147 $\approx$ _____ | 24 963 $\approx$ _____ |
| 25 126 $\approx$ _____ | 26 957 $\approx$ _____ | 27 304 $\approx$ _____ | |

4. Estimating a sum

Round each number to the nearest ten, then add.

- | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 28 126 + 422 $\approx$ _____ | 29 119 + 697 $\approx$ _____ | 30 105 + 147 $\approx$ _____ |
| 31 126 + 235 $\approx$ _____ | 32 119 + 664 $\approx$ _____ | 33 105 + 829 $\approx$ _____ |
| 34 147 + 576 $\approx$ _____ | 35 112 + 609 $\approx$ _____ | |

5. Estimating a difference

Round each number to the nearest ten, then subtract.

- | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 36 301 - 125 $\approx$ _____ | 37 399 - 235 $\approx$ _____ | 38 406 - 301 $\approx$ _____ |
| 39 385 - 356 $\approx$ _____ | 40 336 - 114 $\approx$ _____ | 41 147 - 136 $\approx$ _____ |
| 42 427 - 125 $\approx$ _____ | 43 392 - 378 $\approx$ _____ | |

6. Estimating a product

Round each number to the nearest ten, then multiply.

- | | | |
|-----------------------------------|-----------------------------------|-----------------------------------|
| 44 83 × 46 $\approx$ _____ | 45 38 × 67 $\approx$ _____ | 46 47 × 81 $\approx$ _____ |
| 47 35 × 39 $\approx$ _____ | 48 92 × 88 $\approx$ _____ | 49 38 × 39 $\approx$ _____ |
| 50 65 × 39 $\approx$ _____ | 51 95 × 53 $\approx$ _____ | |

Column Addition and Subtraction

WORKED EXAMPLE

$$\begin{array}{r} 582 \\ - 470 \\ \hline 112 \end{array}$$

7. Add and subtract multi-digit numbers

Add or subtract. Work down the columns, and check the sign first.

$$\begin{array}{r} 1 \quad 932 \\ - 851 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \quad 508 \\ + 514 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \quad 973 \\ - 276 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \quad 962 \\ + 608 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \quad 765 \\ - 677 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \quad 826 \\ + 520 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \quad 796 \\ + 511 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \quad 870 \\ - 463 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \quad 425 \\ + 663 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \quad 935 \\ + 909 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \quad 910 \\ - 557 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \quad 322 \\ + 700 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \quad 562 \\ + 708 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \quad 995 \\ - 522 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \quad 330 \\ + 834 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \quad 515 \\ + 783 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \quad 967 \\ - 745 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \quad 941 \\ + 230 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \quad 858 \\ + 561 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \quad 827 \\ - 566 \\ \hline \end{array}$$

Multiplying Two Digits by One

WORKED EXAMPLE

$$\begin{array}{r} 11 \\ \times 3 \\ \hline 33 \end{array}$$

8. Multiply multi-digit numbers

Multiply. Show your working.

1
$$\begin{array}{r} 77 \\ \times 3 \\ \hline \end{array}$$

2
$$\begin{array}{r} 78 \\ \times 8 \\ \hline \end{array}$$

3
$$\begin{array}{r} 80 \\ \times 4 \\ \hline \end{array}$$

4
$$\begin{array}{r} 81 \\ \times 9 \\ \hline \end{array}$$

5
$$\begin{array}{r} 91 \\ \times 3 \\ \hline \end{array}$$

6
$$\begin{array}{r} 91 \\ \times 8 \\ \hline \end{array}$$

7
$$\begin{array}{r} 54 \\ \times 8 \\ \hline \end{array}$$

8
$$\begin{array}{r} 53 \\ \times 5 \\ \hline \end{array}$$

9
$$\begin{array}{r} 51 \\ \times 8 \\ \hline \end{array}$$

10
$$\begin{array}{r} 79 \\ \times 8 \\ \hline \end{array}$$

11
$$\begin{array}{r} 67 \\ \times 4 \\ \hline \end{array}$$

12
$$\begin{array}{r} 56 \\ \times 8 \\ \hline \end{array}$$

13
$$\begin{array}{r} 77 \\ \times 6 \\ \hline \end{array}$$

14
$$\begin{array}{r} 36 \\ \times 9 \\ \hline \end{array}$$

15
$$\begin{array}{r} 92 \\ \times 6 \\ \hline \end{array}$$

16
$$\begin{array}{r} 98 \\ \times 7 \\ \hline \end{array}$$

17
$$\begin{array}{r} 72 \\ \times 3 \\ \hline \end{array}$$

18
$$\begin{array}{r} 65 \\ \times 6 \\ \hline \end{array}$$

19
$$\begin{array}{r} 89 \\ \times 8 \\ \hline \end{array}$$

20
$$\begin{array}{r} 79 \\ \times 3 \\ \hline \end{array}$$

21
$$\begin{array}{r} 54 \\ \times 7 \\ \hline \end{array}$$

22
$$\begin{array}{r} 58 \\ \times 8 \\ \hline \end{array}$$

23
$$\begin{array}{r} 78 \\ \times 9 \\ \hline \end{array}$$

24
$$\begin{array}{r} 56 \\ \times 5 \\ \hline \end{array}$$

9. The value of a digit

Write what the underlined digit is worth.

25 $\underline{8}345 \rightarrow \underline{\hspace{2cm}}$

26 $1\underline{7}02 \rightarrow \underline{\hspace{2cm}}$

27 $\underline{8}515 \rightarrow \underline{\hspace{2cm}}$

28 $950\underline{5} \rightarrow \underline{\hspace{2cm}}$

29 $4\underline{5}18 \rightarrow \underline{\hspace{2cm}}$

30 $\underline{1}098 \rightarrow \underline{\hspace{2cm}}$

31 $\underline{1}013 \rightarrow \underline{\hspace{2cm}}$

32 $\underline{3}613 \rightarrow \underline{\hspace{2cm}}$

33 $810\underline{2} \rightarrow \underline{\hspace{2cm}}$

34 $\underline{1}800 \rightarrow \underline{\hspace{2cm}}$

Multiplying Three Digits by One

WORKED EXAMPLE

$$\begin{array}{r} 198 \\ \times 8 \\ \hline 1584 \end{array}$$

10. Multiply multi-digit numbers

Multiply. Show your working.

$$\begin{array}{r} 1 \quad 395 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \quad 586 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \quad 219 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \quad 892 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \quad 903 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \quad 730 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \quad 922 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \quad 433 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \quad 891 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \quad 804 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \quad 807 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \quad 681 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \quad 925 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \quad 225 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \quad 870 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \quad 883 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \quad 908 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \quad 881 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \quad 755 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \quad 996 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 21 \quad 933 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \quad 917 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 23 \quad 508 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 24 \quad 356 \\ \times 8 \\ \hline \end{array}$$

11. Estimating a sum

Round each number to the nearest ten, then add.

$$25 \quad 112 + 598 \approx \underline{\hspace{2cm}}$$

$$26 \quad 147 + 895 \approx \underline{\hspace{2cm}}$$

$$27 \quad 119 + 334 \approx \underline{\hspace{2cm}}$$

$$28 \quad 105 + 906 \approx \underline{\hspace{2cm}}$$

$$29 \quad 154 + 345 \approx \underline{\hspace{2cm}}$$

$$30 \quad 112 + 829 \approx \underline{\hspace{2cm}}$$

$$31 \quad 126 + 455 \approx \underline{\hspace{2cm}}$$

$$32 \quad 154 + 477 \approx \underline{\hspace{2cm}}$$

$$33 \quad 105 + 928 \approx \underline{\hspace{2cm}}$$

$$34 \quad 119 + 697 \approx \underline{\hspace{2cm}}$$

Multiplying Two Digits by Two

WORKED EXAMPLE

$$\begin{array}{r}
 47 \\
 \times 32 \\
 \hline
 94 \\
 1410 \\
 \hline
 1504
 \end{array}$$

12. Multiply multi-digit numbers

Multiply. Show your working.

$$\begin{array}{r}
 1 \quad 73 \\
 \times 37 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 47 \\
 \times 76 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 3 \quad 43 \\
 \times 67 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4 \quad 90 \\
 \times 84 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 5 \quad 35 \\
 \times 57 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 6 \quad 62 \\
 \times 72 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 7 \quad 81 \\
 \times 71 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 8 \quad 37 \\
 \times 44 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 9 \quad 83 \\
 \times 51 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 10 \quad 57 \\
 \times 78 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 11 \quad 36 \\
 \times 75 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 12 \quad 89 \\
 \times 87 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 13 \quad 59 \\
 \times 97 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 14 \quad 47 \\
 \times 52 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 15 \quad 68 \\
 \times 57 \\
 \hline
 \end{array}$$

13. Rounding numbers

Round each number to the nearest 10.

16 **231** $\approx$ _____

17 **546** $\approx$ _____

18 **547** $\approx$ _____

19 **66** $\approx$ _____

20 **909** $\approx$ _____

21 **259** $\approx$ _____

22 **72** $\approx$ _____

23 **262** $\approx$ _____

24 **569** $\approx$ _____

25 **539** $\approx$ _____

Division with Remainders

WORKED EXAMPLE

$$34 \div 4 = \underline{8} \text{ R } \underline{2}$$

14. Division with remainders

Divide. Write the quotient and the remainder.

- | | | |
|--|---|--|
| 1 $45 \div 4 = \underline{\quad} \text{ R } \underline{\quad}$ | 2 $63 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 3 $48 \div 5 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 4 $81 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 5 $37 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$ | 6 $76 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 7 $102 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$ | 8 $57 \div 7 = \underline{\quad} \text{ R } \underline{\quad}$ | 9 $62 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 10 $87 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 11 $56 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$ | 12 $85 \div 7 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 13 $89 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 14 $43 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 15 $66 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 16 $102 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 17 $43 \div 4 = \underline{\quad} \text{ R } \underline{\quad}$ | 18 $114 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 19 $94 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$ | 20 $45 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$ | 21 $110 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$ |
| 22 $84 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$ | 23 $64 \div 5 = \underline{\quad} \text{ R } \underline{\quad}$ | 24 $53 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$ |

15. Word problems: dividing

Read each problem. Write the answer.

- 25 63 treats are arranged in 9 rows, with the same number in every row. Courtney also keeps 2 carrots.

How many treats stand in one row?

- 26 Courtney has 18 water bottles, which is 2 times as many as Milo has.

How many water bottles does Milo have?

- 27 Ana put 45 tickets equally into 5 shelves. Besides those, Ana has 3 notebooks.

How many tickets went in each shelf?

- 28 Dev has 80 croissants and Kwame has 10 croissants.

How many times as many croissants does Dev have as Kwame?

Long Division

WORKED EXAMPLE

$$\begin{array}{r} 31 \\ 4 \overline{)124} \\ \underline{12} \\ 4 \\ \underline{4} \\ 0 \end{array}$$

16. Long division

Divide. Show your working.

$$\begin{array}{l} 1 \quad 3 \overline{)411} \quad 2 \quad 8 \overline{)768} \quad 3 \quad 7 \overline{)525} \quad 4 \quad 5 \overline{)925} \quad 5 \quad 5 \overline{)560} \quad 6 \quad 3 \overline{)696} \end{array}$$

$$\begin{array}{l} 7 \quad 3 \overline{)981} \quad 8 \quad 5 \overline{)395} \quad 9 \quad 5 \overline{)850} \quad 10 \quad 7 \overline{)917} \quad 11 \quad 7 \overline{)574} \quad 12 \quad 3 \overline{)795} \end{array}$$

17. Add and subtract multi-digit numbers

Add or subtract. Work down the columns, and check the sign first.

$$\begin{array}{r} 13 \quad 958 \\ - 374 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \quad 805 \\ + 614 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \quad 914 \\ - 311 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \quad 644 \\ + 499 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \quad 730 \\ - 112 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \quad 650 \\ + 646 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \quad 982 \\ + 210 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \quad 845 \\ - 266 \\ \hline \end{array}$$

Long Division with Remainders

WORKED EXAMPLE

$$\begin{array}{r} 54 \\ 5 \overline{)274} \\ \underline{25} \\ 24 \\ \underline{20} \\ 4 \end{array}$$

18. Long division with remainders

Divide. Give the quotient and the remainder.

$$\begin{array}{l} 1 \\ 7 \overline{)627} \quad 7 \overline{)888} \quad 3 \overline{)545} \quad 5 \overline{)817} \quad 9 \overline{)438} \quad 6 \overline{)799} \end{array}$$

$$\begin{array}{l} 7 \\ 4 \overline{)725} \quad 9 \overline{)453} \quad 5 \overline{)821} \quad 8 \overline{)852} \quad 9 \overline{)553} \quad 2 \overline{)909} \end{array}$$

19. Multiply multi-digit numbers

Multiply. Show your working.

$$\begin{array}{r} 13 \\ \times 25 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ \times 45 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ \times 72 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ \times 78 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ \times 68 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ \times 55 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ \times 96 \\ \hline \end{array}$$

$$\begin{array}{r} 20 \\ \times 38 \\ \hline \end{array}$$

WORKED EXAMPLE

 $37 \rightarrow 1, 37$ **20. List the factors**

List all the factors of each number.

- 1 $39 \rightarrow$ _____
- 2 $12 \rightarrow$ _____
- 3 $33 \rightarrow$ _____
- 4 $24 \rightarrow$ _____
- 5 $26 \rightarrow$ _____
- 6 $20 \rightarrow$ _____
- 7 $40 \rightarrow$ _____
- 8 $8 \rightarrow$ _____
- 9 $28 \rightarrow$ _____
- 10 $18 \rightarrow$ _____
- 11 $34 \rightarrow$ _____
- 12 $30 \rightarrow$ _____
- 13 $16 \rightarrow$ _____
- 14 $22 \rightarrow$ _____
- 15 $32 \rightarrow$ _____
- 16 $36 \rightarrow$ _____
- 17 $15 \rightarrow$ _____
- 18 $19 \rightarrow$ _____
- 19 $27 \rightarrow$ _____
- 20 $21 \rightarrow$ _____
- 21 $2 \rightarrow$ _____
- 22 $35 \rightarrow$ _____
- 23 $10 \rightarrow$ _____
- 24 $23 \rightarrow$ _____

21. Division with remainders

Divide. Write the quotient and the remainder.

25 $47 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$

26 $70 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$

27 $37 \div 7 = \underline{\quad} \text{ R } \underline{\quad}$

28 $85 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$

29 $46 \div 4 = \underline{\quad} \text{ R } \underline{\quad}$

30 $76 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$

31 $76 \div 7 = \underline{\quad} \text{ R } \underline{\quad}$

32 $51 \div 7 = \underline{\quad} \text{ R } \underline{\quad}$

Multiples

WORKED EXAMPLE

5 → 5, 10, 15, 20, 25

22. Multiples

List the first five multiples of each number.

- 1 19 → _____
- 2 30 → _____
- 3 25 → _____
- 4 39 → _____
- 5 27 → _____
- 6 36 → _____
- 7 32 → _____
- 8 22 → _____
- 9 35 → _____
- 10 40 → _____
- 11 24 → _____
- 12 38 → _____
- 13 34 → _____
- 14 18 → _____

23. Circling multiples

Circle every multiple of the number in the box.

- 15 6 22 5 30 27 24 18
- 16 11 33 27 14 28 10 11
- 17 7 28 7 11 16 34 35
- 18 11 8 19 11 22 33 14
- 19 9 9 38 18 40 26 31
- 20 11 11 18 2 22 7 33
- 21 10 40 14 30 12 37 10
- 22 8 36 8 11 30 14 24

24. Long division

Divide. Show your working.

23

$$5 \overline{) 670}$$

24

$$8 \overline{) 824}$$

25

$$5 \overline{) 690}$$

26

$$3 \overline{) 942}$$

27

$$2 \overline{) 458}$$

28

$$6 \overline{) 888}$$

29

$$8 \overline{) 904}$$

30

$$3 \overline{) 522}$$

Prime and Composite Numbers

WORKED EXAMPLE

34 Prime / Composite

25. Prime or composite

Circle whether each number is prime or composite.

1 46 Prime / Composite

2 25 Prime / Composite

3 23 Prime / Composite

4 29 Prime / Composite

5 42 Prime / Composite

6 31 Prime / Composite

7 43 Prime / Composite

8 13 Prime / Composite

9 41 Prime / Composite

10 21 Prime / Composite

11 40 Prime / Composite

12 45 Prime / Composite

13 35 Prime / Composite

14 3 Prime / Composite

15 9 Prime / Composite

16 15 Prime / Composite

17 7 Prime / Composite

18 39 Prime / Composite

19 27 Prime / Composite

20 44 Prime / Composite

21 37 Prime / Composite

22 47 Prime / Composite

23 33 Prime / Composite

24 5 Prime / Composite

26. Long division with remainders

Divide. Give the quotient and the remainder.

25

$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 8 \overline{) 467} \end{array}$$
$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 3 \overline{) 893} \end{array}$$
$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 5 \overline{) 617} \end{array}$$
$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 4 \overline{) 877} \end{array}$$
$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 5 \overline{) 569} \end{array}$$
$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 3 \overline{) 709} \end{array}$$

31

$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 7 \overline{) 710} \end{array}$$
$$\begin{array}{r} \underline{\hspace{1cm}} \text{ R } \underline{\hspace{1cm}} \\ 7 \overline{) 603} \end{array}$$

Adding and Subtracting Fractions

WORKED EXAMPLE

$$\frac{1}{7} + \frac{5}{7} = \frac{6}{7}$$

27. Add and subtract fractions

Add or subtract. Write each answer in simplest form.

1 $\frac{2}{7} - \frac{1}{7} = \text{—}$

2 $\frac{6}{7} + \frac{2}{7} = \text{—}$

3 $\frac{3}{5} - \frac{2}{5} = \text{—}$

4 $\frac{3}{4} - \frac{1}{4} = \text{—}$

5 $\frac{6}{8} - \frac{5}{8} = \text{—}$

6 $\frac{4}{7} + \frac{4}{7} = \text{—}$

7 $\frac{6}{8} - \frac{3}{8} = \text{—}$

8 $\frac{4}{7} - \frac{2}{7} = \text{—}$

9 $\frac{4}{6} - \frac{3}{6} = \text{—}$

10 $\frac{7}{8} - \frac{5}{8} = \text{—}$

11 $\frac{5}{8} - \frac{4}{8} = \text{—}$

12 $\frac{1}{7} + \frac{4}{7} = \text{—}$

13 $\frac{3}{8} - \frac{2}{8} = \text{—}$

14 $\frac{2}{5} - \frac{1}{5} = \text{—}$

15 $\frac{5}{8} - \frac{3}{8} = \text{—}$

16 $\frac{6}{8} - \frac{2}{8} = \text{—}$

17 $\frac{2}{4} - \frac{1}{4} = \text{—}$

18 $\frac{6}{7} - \frac{4}{7} = \text{—}$

19 $\frac{1}{7} + \frac{6}{7} = \text{—}$

20 $\frac{3}{6} - \frac{2}{6} = \text{—}$

21 $\frac{6}{7} - \frac{5}{7} = \text{—}$

22 $\frac{5}{7} - \frac{3}{7} = \text{—}$

23 $\frac{3}{8} - \frac{1}{8} = \text{—}$

24 $\frac{4}{8} - \frac{2}{8} = \text{—}$

25 $\frac{6}{8} + \frac{7}{8} = \text{—}$

26 $\frac{5}{7} - \frac{4}{7} = \text{—}$

27 $\frac{2}{6} - \frac{1}{6} = \text{—}$

28 $\frac{7}{8} - \frac{6}{8} = \text{—}$

29 $\frac{4}{6} - \frac{1}{6} = \text{—}$

30 $\frac{5}{6} - \frac{1}{6} = \text{—}$

31 $\frac{6}{8} - \frac{1}{8} = \text{—}$

32 $\frac{3}{8} + \frac{4}{8} = \text{—}$

33 $\frac{4}{5} - \frac{2}{5} = \text{—}$

34 $\frac{2}{3} - \frac{1}{3} = \text{—}$

35 $\frac{6}{7} - \frac{2}{7} = \text{—}$

36 $\frac{5}{6} - \frac{4}{6} = \text{—}$

37 $\frac{3}{7} - \frac{2}{7} = \text{—}$

38 $\frac{3}{6} + \frac{3}{6} = \text{—}$

39 $\frac{6}{7} - \frac{3}{7} = \text{—}$

40 $\frac{5}{8} - \frac{1}{8} = \text{—}$

41 $\frac{4}{7} - \frac{1}{7} = \text{—}$

42 $\frac{7}{8} - \frac{1}{8} = \text{—}$

28. List the factors

List all the factors of each number.

43 8 → _____

44 24 → _____

45 6 → _____

28. List the factors (continued)

List all the factors of each number.

46 **18** → _____

47 **27** → _____

48 **30** → _____

49 **32** → _____

50 **15** → _____

51 **20** → _____

52 **40** → _____

WORKED EXAMPLE

$$4\frac{2}{5} + 3\frac{2}{5} = 7\frac{4}{5}$$

29. Adding mixed numbers

Add. Write each answer as a mixed number in simplest form.

- | | | |
|---|---|---|
| 1 $4\frac{4}{7} + 4\frac{4}{7} = \underline{\hspace{1cm}}$ | 2 $3\frac{6}{7} + 5\frac{6}{7} = \underline{\hspace{1cm}}$ | 3 $5\frac{1}{7} + 4\frac{4}{7} = \underline{\hspace{1cm}}$ |
| 4 $5\frac{2}{5} + 3\frac{4}{5} = \underline{\hspace{1cm}}$ | 5 $1\frac{4}{5} + 2\frac{1}{5} = \underline{\hspace{1cm}}$ | 6 $1\frac{5}{8} + 5\frac{5}{8} = \underline{\hspace{1cm}}$ |
| 7 $5\frac{1}{8} + 3\frac{5}{8} = \underline{\hspace{1cm}}$ | 8 $5\frac{4}{5} + 1\frac{2}{5} = \underline{\hspace{1cm}}$ | 9 $2\frac{2}{5} + 5\frac{3}{5} = \underline{\hspace{1cm}}$ |
| 10 $2\frac{1}{5} + 4\frac{3}{5} = \underline{\hspace{1cm}}$ | 11 $2\frac{4}{5} + 4\frac{1}{5} = \underline{\hspace{1cm}}$ | 12 $1\frac{5}{8} + 2\frac{5}{8} = \underline{\hspace{1cm}}$ |
| 13 $2\frac{3}{7} + 4\frac{2}{7} = \underline{\hspace{1cm}}$ | 14 $3\frac{1}{8} + 3\frac{7}{8} = \underline{\hspace{1cm}}$ | 15 $2\frac{3}{7} + 2\frac{1}{7} = \underline{\hspace{1cm}}$ |
| 16 $4\frac{6}{7} + 3\frac{1}{7} = \underline{\hspace{1cm}}$ | 17 $2\frac{3}{5} + 3\frac{3}{5} = \underline{\hspace{1cm}}$ | 18 $4\frac{3}{7} + 3\frac{3}{7} = \underline{\hspace{1cm}}$ |
| 19 $3\frac{4}{7} + 2\frac{4}{7} = \underline{\hspace{1cm}}$ | 20 $1\frac{1}{7} + 4\frac{6}{7} = \underline{\hspace{1cm}}$ | 21 $4\frac{3}{7} + 5\frac{1}{7} = \underline{\hspace{1cm}}$ |
| 22 $2\frac{5}{8} + 3\frac{3}{8} = \underline{\hspace{1cm}}$ | 23 $5\frac{3}{4} + 2\frac{3}{4} = \underline{\hspace{1cm}}$ | 24 $1\frac{2}{7} + 1\frac{3}{7} = \underline{\hspace{1cm}}$ |
| 25 $3\frac{5}{8} + 5\frac{7}{8} = \underline{\hspace{1cm}}$ | 26 $2\frac{5}{8} + 1\frac{7}{8} = \underline{\hspace{1cm}}$ | 27 $1\frac{5}{8} + 1\frac{1}{8} = \underline{\hspace{1cm}}$ |
| 28 $1\frac{4}{5} + 1\frac{2}{5} = \underline{\hspace{1cm}}$ | 29 $5\frac{1}{5} + 5\frac{4}{5} = \underline{\hspace{1cm}}$ | 30 $2\frac{4}{7} + 3\frac{1}{7} = \underline{\hspace{1cm}}$ |
| 31 $5\frac{1}{6} + 1\frac{5}{6} = \underline{\hspace{1cm}}$ | 32 $1\frac{5}{8} + 1\frac{5}{8} = \underline{\hspace{1cm}}$ | 33 $2\frac{1}{7} + 3\frac{3}{7} = \underline{\hspace{1cm}}$ |
| 34 $2\frac{3}{7} + 4\frac{4}{7} = \underline{\hspace{1cm}}$ | 35 $2\frac{3}{4} + 3\frac{3}{4} = \underline{\hspace{1cm}}$ | 36 $2\frac{3}{8} + 3\frac{1}{8} = \underline{\hspace{1cm}}$ |
| 37 $5\frac{6}{7} + 4\frac{2}{7} = \underline{\hspace{1cm}}$ | 38 $2\frac{5}{8} + 1\frac{5}{8} = \underline{\hspace{1cm}}$ | 39 $2\frac{2}{7} + 5\frac{4}{7} = \underline{\hspace{1cm}}$ |
| 40 $4\frac{2}{7} + 4\frac{5}{7} = \underline{\hspace{1cm}}$ | 41 $5\frac{1}{7} + 2\frac{4}{7} = \underline{\hspace{1cm}}$ | |

30. Multiples

List the first five multiples of each number.

- 42 **20** → _____
- 43 **33** → _____
- 44 **24** → _____

30. Multiples (continued)

List the first five multiples of each number.

45 **37** → _____

46 **25** → _____

47 **31** → _____

48 **40** → _____

49 **27** → _____

50 **39** → _____

51 **29** → _____

Tenths and Hundredths

WORKED EXAMPLE

29.23 → 0.2

31. What the digit is worth

Write the value of the highlighted digit.

- | | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|
| 1 44. <u>1</u> 9 → _____ | 2 89. <u>8</u> 2 → _____ | 3 46.6 <u>5</u> → _____ | 4 88. <u>3</u> 3 → _____ |
| 5 48. <u>9</u> 7 → _____ | 6 75.0 <u>1</u> → _____ | 7 77. <u>3</u> 2 → _____ | 8 68. <u>2</u> 7 → _____ |
| 9 76.9 <u>5</u> → _____ | 10 84. <u>8</u> 5 → _____ | 11 37. <u>7</u> 4 → _____ | 12 75.7 <u>3</u> → _____ |
| 13 77.7 <u>5</u> → _____ | 14 56. <u>6</u> 0 → _____ | 15 86.8 <u>1</u> → _____ | 16 74.3 <u>7</u> → _____ |
| 17 67. <u>6</u> 6 → _____ | 18 74.9 <u>4</u> → _____ | 19 89.0 <u>5</u> → _____ | 20 62. <u>6</u> 0 → _____ |
| 21 98.8 <u>2</u> → _____ | 22 91. <u>2</u> 7 → _____ | 23 98. <u>2</u> 8 → _____ | 24 39.3 <u>2</u> → _____ |

32. Naming the place

Name the place of the highlighted digit.

- | | |
|---------------------------------|---------------------------------|
| 25 50. <u>9</u> 7 → _____ place | 26 72.5 <u>2</u> → _____ place |
| 27 47.8 <u>8</u> → _____ place | 28 82.1 <u>4</u> → _____ place |
| 29 58.3 <u>8</u> → _____ place | 30 67. <u>5</u> 8 → _____ place |
| 31 66.1 <u>7</u> → _____ place | 32 51.3 <u>7</u> → _____ place |
| 33 72. <u>2</u> 3 → _____ place | 34 91. <u>4</u> 6 → _____ place |
| 35 50.1 <u>4</u> → _____ place | 36 69. <u>3</u> 9 → _____ place |
| 37 67. <u>6</u> 7 → _____ place | 38 40.5 <u>9</u> → _____ place |
| 39 64. <u>9</u> 7 → _____ place | 40 77. <u>2</u> 9 → _____ place |
| 41 54. <u>4</u> 1 → _____ place | 42 76.4 <u>5</u> → _____ place |
| 43 98. <u>1</u> 3 → _____ place | 44 35.7 <u>2</u> → _____ place |
| 45 99.1 <u>8</u> → _____ place | 46 98.8 <u>5</u> → _____ place |
| 47 94. <u>1</u> 7 → _____ place | 48 54. <u>2</u> 6 → _____ place |

33. Prime or composite

Circle whether each number is prime or composite.

- | | |
|-------------------------|-------------------------|
| 49 50 Prime / Composite | 50 39 Prime / Composite |
| 51 7 Prime / Composite | 52 9 Prime / Composite |
| 53 2 Prime / Composite | 54 43 Prime / Composite |

33. Prime or composite (continued)

Circle whether each number is prime or composite.

- 55

45

Prime / Composite
- 56

11

Prime / Composite
- 57

25

Prime / Composite
- 58

31

Prime / Composite

Comparing Decimals

WORKED EXAMPLE

$$2.9 \boxed{<} 7.48$$

34. Compare decimals

Write $>$, $=$, or $<$ between each pair of decimals.

- | | | | |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| 1 $6.3 \boxed{} 7.2$ | 2 $3.12 \boxed{} 5.71$ | 3 $1.94 \boxed{} 2.17$ | 4 $7.78 \boxed{} 9.2$ |
| 5 $1.89 \boxed{} 1.16$ | 6 $4.24 \boxed{} 3.0$ | 7 $6.13 \boxed{} 4.87$ | 8 $6.2 \boxed{} 5.2$ |
| 9 $4.71 \boxed{} 8.5$ | 10 $4.95 \boxed{} 6.1$ | 11 $6.9 \boxed{} 5.47$ | 12 $7.32 \boxed{} 4.46$ |
| 13 $2.95 \boxed{} 3.06$ | 14 $8.6 \boxed{} 5.5$ | 15 $7.65 \boxed{} 0.96$ | 16 $6.17 \boxed{} 3.8$ |
| 17 $6.5 \boxed{} 1.54$ | 18 $2.92 \boxed{} 8.4$ | 19 $5.69 \boxed{} 2.04$ | 20 $9.3 \boxed{} 3.2$ |
| 21 $5.21 \boxed{} 1.57$ | 22 $7.06 \boxed{} 0.5$ | 23 $9.60 \boxed{} 3.3$ | 24 $6.6 \boxed{} 9.6$ |
| 25 $7.40 \boxed{} 9.81$ | 26 $4.14 \boxed{} 2.83$ | 27 $1.56 \boxed{} 4.1$ | 28 $6.28 \boxed{} 8.56$ |
| 29 $7.31 \boxed{} 8.09$ | 30 $6.5 \boxed{} 1.22$ | | |

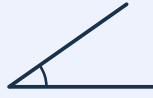
35. Rounding numbers

Round each number to the nearest 10.

- | | | | |
|---|---|---|---|
| 31 $389 \approx \underline{\hspace{1cm}}$ | 32 $222 \approx \underline{\hspace{1cm}}$ | 33 $617 \approx \underline{\hspace{1cm}}$ | 34 $891 \approx \underline{\hspace{1cm}}$ |
| 35 $111 \approx \underline{\hspace{1cm}}$ | 36 $585 \approx \underline{\hspace{1cm}}$ | 37 $878 \approx \underline{\hspace{1cm}}$ | 38 $867 \approx \underline{\hspace{1cm}}$ |
| 39 $284 \approx \underline{\hspace{1cm}}$ | 40 $374 \approx \underline{\hspace{1cm}}$ | 41 $462 \approx \underline{\hspace{1cm}}$ | 42 $164 \approx \underline{\hspace{1cm}}$ |
| 43 $206 \approx \underline{\hspace{1cm}}$ | 44 $643 \approx \underline{\hspace{1cm}}$ | 45 $888 \approx \underline{\hspace{1cm}}$ | 46 $276 \approx \underline{\hspace{1cm}}$ |
| 47 $571 \approx \underline{\hspace{1cm}}$ | 48 $745 \approx \underline{\hspace{1cm}}$ | 49 $765 \approx \underline{\hspace{1cm}}$ | 50 $776 \approx \underline{\hspace{1cm}}$ |

Types of Angle

WORKED EXAMPLE



acute

right

obtuse

36. Acute, right, or obtuse

Write whether each angle is acute, right, or obtuse.

1



acute

right

obtuse

2



acute

right

obtuse

3



acute

right

obtuse

4



acute

right

obtuse

5



acute

right

obtuse

6



acute

right

obtuse

7



acute

right

obtuse

8



acute

right

obtuse

9



acute

right

obtuse

37. Add and subtract fractions

Add or subtract. Write each answer in simplest form.

$$10 \quad \frac{4}{6} - \frac{1}{6} = \text{---}$$

$$11 \quad \frac{1}{6} + \frac{2}{6} = \text{---}$$

$$12 \quad \frac{3}{5} - \frac{1}{5} = \text{---}$$

$$13 \quad \frac{6}{7} - \frac{4}{7} = \text{---}$$

$$14 \quad \frac{4}{7} - \frac{1}{7} = \text{---}$$

$$15 \quad \frac{4}{6} + \frac{3}{6} = \text{---}$$

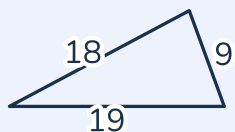
$$16 \quad \frac{3}{8} - \frac{2}{8} = \text{---}$$

$$17 \quad \frac{4}{5} - \frac{2}{5} = \text{---}$$

$$18 \quad \frac{7}{8} - \frac{4}{8} = \text{---}$$

Types of Triangle

WORKED EXAMPLE



equilateral

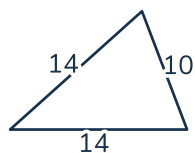
isosceles

scalene

38. Classify triangles by angles or sides

Name each triangle.

1

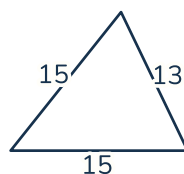


equilateral

isosceles

scalene

2

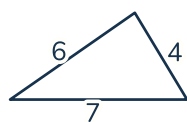


equilateral

isosceles

scalene

3

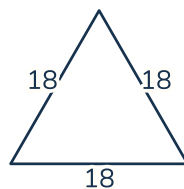


equilateral

isosceles

scalene

4

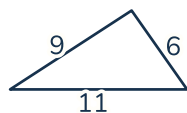


equilateral

isosceles

scalene

5

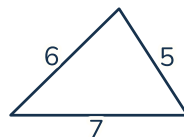


equilateral

isosceles

scalene

6

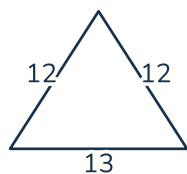


equilateral

isosceles

scalene

7

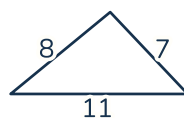


equilateral

isosceles

scalene

8



equilateral

isosceles

scalene

39. Adding mixed numbers

Add. Write each answer as a mixed number in simplest form.

$$9 \quad 3\frac{1}{8} + 1\frac{7}{8} = \underline{\hspace{1cm}} \text{ —}$$

$$10 \quad 3\frac{6}{7} + 1\frac{4}{7} = \underline{\hspace{1cm}} \text{ —}$$

$$11 \quad 2\frac{1}{7} + 2\frac{2}{7} = \underline{\hspace{1cm}} \text{ —}$$

$$12 \quad 5\frac{3}{5} + 2\frac{3}{5} = \underline{\hspace{1cm}} \text{ —}$$

$$13 \quad 5\frac{7}{8} + 2\frac{5}{8} = \underline{\hspace{1cm}} \text{ —}$$

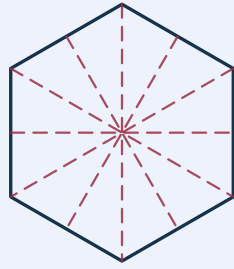
$$14 \quad 5\frac{6}{7} + 2\frac{4}{7} = \underline{\hspace{1cm}} \text{ —}$$

$$15 \quad 4\frac{1}{5} + 4\frac{3}{5} = \underline{\hspace{1cm}} \text{ —}$$

$$16 \quad 1\frac{3}{8} + 2\frac{7}{8} = \underline{\hspace{1cm}} \text{ —}$$

Lines of Symmetry

WORKED EXAMPLE

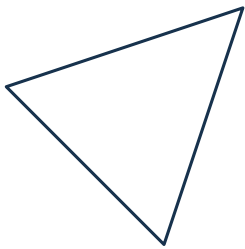


6 lines

40. Lines of symmetry

Write how many lines of symmetry each shape has.

1



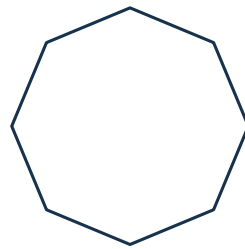
_____ lines

2



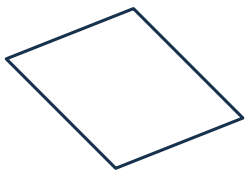
_____ lines

3



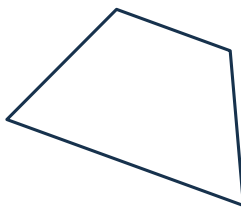
_____ lines

4



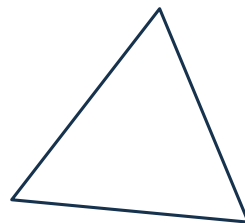
_____ lines

5



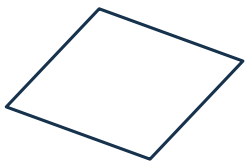
_____ lines

6



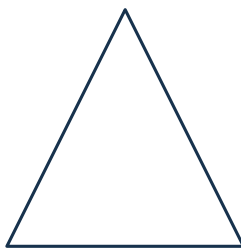
_____ lines

7



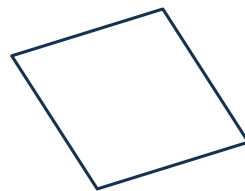
_____ lines

8



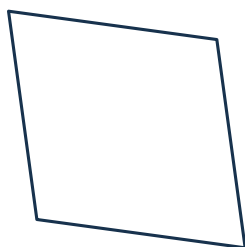
_____ lines

9



_____ lines

10



_____ lines

41. What the digit is worth

Write the value of the highlighted digit.

- 11 37.32 → _____ 12 75.67 → _____ 13 48.18 → _____ 14 81.26 → _____
15 60.34 → _____ 16 98.53 → _____ 17 80.95 → _____ 18 58.71 → _____
19 92.58 → _____ 20 99.18 → _____

Number Patterns

WORKED EXAMPLE

2, 11, 20, 29, 38

42. Number patterns

Find the missing number in each pattern.

- | | | |
|----------------------|----------------------|----------------------|
| 1 8, 18, 28, __, 48 | 2 1, __, 17, 25, 33 | 3 6, 14, 22, __, 38 |
| 4 5, 13, 21, __, 37 | 5 9, __, 19, 24, 29 | 6 3, 9, __, 21, 27 |
| 7 6, __, 28, 39, 50 | 8 8, 16, 24, __, 40 | 9 4, 15, 26, __, 48 |
| 10 1, 9, __, 25, 33 | 11 5, 9, __, 17, 21 | 12 6, 9, 12, __, 18 |
| 13 8, 11, 14, __, 20 | 14 8, __, 12, 14, 16 | 15 2, 13, __, 35, 46 |
| 16 2, 7, 12, __, 22 | 17 1, 11, __, 31, 41 | 18 7, 14, 21, __, 35 |
| 19 9, __, 15, 18, 21 | 20 9, __, 23, 30, 37 | 21 8, 10, 12, __, 16 |
| 22 9, 11, __, 15, 17 | 23 9, 16, 23, __, 37 | 24 4, __, 16, 22, 28 |

43. Compare decimals

Write $>$, $=$, or $<$ between each pair of decimals.

- | | | | |
|----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|
| 25 7.4 <input type="text"/> 7.40 | 26 7.32 <input type="text"/> 4.46 | 27 1.20 <input type="text"/> 4.1 | 28 7.51 <input type="text"/> 7.86 |
| 29 7.2 <input type="text"/> 2.6 | 30 9.14 <input type="text"/> 1.3 | 31 3.66 <input type="text"/> 5.6 | 32 6.5 <input type="text"/> 1.54 |
| 33 4.14 <input type="text"/> 2.5 | 34 3.43 <input type="text"/> 8.53 | | |

Line Plots and Bar Graphs

44. Line plots

Read each line plot and answer the question.

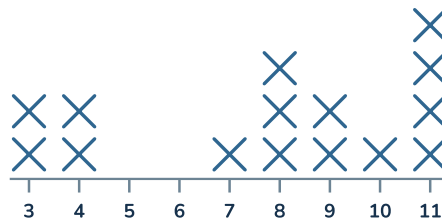
Length of our pencils (inches)



- 1 How many more pencils measured 7 inches than 4 inches?

—

Height of the bean plants (inches)



- 2 How many plants were measured altogether?

—

- 3 How many plants were longer than 4 inches?

—

45. Bar graphs

Read each bar graph and answer the question.



- 4 How many more chose running than chose football?

- 5 How many fewer chose swimming than chose running?

- 6 How many altogether?

Spot the Mistake

WORKED EXAMPLE

Theo wrote $11 - 9 = 12$. Write the correct answer.

ANSWER: **2**

Why? ANSWER: a ten was not borrowed.

46. Spot the error

Read each question and write what you work out.

- 1 Theo wrote $53 - 20 = 23$. Write the correct answer.

Why?

- 2 Noor wrote $3 \times 3 = 6$. Write the correct answer.

Why?

- 3 Mia wrote $16 - 3 = 3$. Write the correct answer.

Why?

- 4 Ben wrote $4 \times 9 = 32$. Write the correct answer.

Why?

- 5 Ben wrote $47 - 13 = 24$. Write the correct answer.

Why?

- 6 Priya wrote $7 \times 9 = 16$. Write the correct answer.

Why?

46. Spot the error (continued)

Read each question and write what you work out.

7 Noor wrote $6 \times 8 = 14$. Write the correct answer.

Why?

8 Mia wrote $10 \times 11 = 21$. Write the correct answer.

Why?

Review: Multiplying

WORKED EXAMPLE

$$\begin{array}{r}
 779 \\
 \times 19 \\
 \hline
 7011 \\
 7790 \\
 \hline
 14801
 \end{array}$$

47. Multiply multi-digit numbers

Multiply. Show your working.

$$\begin{array}{r}
 1 \quad 993 \\
 \times 29 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 721 \\
 \times 57 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 3 \quad 933 \\
 \times 28 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4 \quad 898 \\
 \times 71 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 5 \quad 452 \\
 \times 54 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 6 \quad 602 \\
 \times 66 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 7 \quad 566 \\
 \times 76 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 8 \quad 392 \\
 \times 55 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 9 \quad 648 \\
 \times 99 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 10 \quad 547 \\
 \times 71 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 11 \quad 885 \\
 \times 25 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 12 \quad 985 \\
 \times 97 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 13 \quad 625 \\
 \times 72 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 14 \quad 350 \\
 \times 55 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 15 \quad 810 \\
 \times 59 \\
 \hline
 \end{array}$$

48. Number patterns

Find the missing number in each pattern.

$$16 \quad 8, _, 32, 44, 56$$

$$17 \quad 3, 8, 13, _, 23$$

$$18 \quad 2, _, 26, 38, 50$$

$$19 \quad 3, 14, _, 36, 47$$

$$20 \quad 7, 11, 15, _, 23$$

$$21 \quad 1, _, 13, 19, 25$$

48. Number patterns (continued)

Find the missing number in each pattern.

22 3, 15, 27, ____, 51

23 1, 11, ____, 31, 41

24 7, 18, 29, ____, 51

25 6, 17, ____, 39, 50

Review: Division and Factors

WORKED EXAMPLE

$$33 \div 5 = \underline{6} \text{ R } \underline{3}$$

49. Division with remainders

Divide. Write the quotient and the remainder.

1 $57 \div 5 = \underline{\quad} \text{ R } \underline{\quad}$

2 $112 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$

3 $47 \div 5 = \underline{\quad} \text{ R } \underline{\quad}$

4 $77 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$

5 $43 \div 6 = \underline{\quad} \text{ R } \underline{\quad}$

6 $86 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$

7 $63 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$

8 $46 \div 5 = \underline{\quad} \text{ R } \underline{\quad}$

9 $100 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$

10 $82 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$

11 $49 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$

12 $90 \div 7 = \underline{\quad} \text{ R } \underline{\quad}$

13 $75 \div 8 = \underline{\quad} \text{ R } \underline{\quad}$

14 $52 \div 9 = \underline{\quad} \text{ R } \underline{\quad}$

50. List the factors

List all the factors of each number.

15 $39 \rightarrow$ _____

16 $32 \rightarrow$ _____

17 $14 \rightarrow$ _____

18 $16 \rightarrow$ _____

19 $27 \rightarrow$ _____

20 $18 \rightarrow$ _____

21 $24 \rightarrow$ _____

22 $8 \rightarrow$ _____

23 $28 \rightarrow$ _____

24 $30 \rightarrow$ _____

25 $26 \rightarrow$ _____

26 $12 \rightarrow$ _____

27 $40 \rightarrow$ _____

28 $15 \rightarrow$ _____

Answer Key (1 of 10)

Place Value in Four-Digit Numbers

The value of a digit

1. 7264 (2) $\rightarrow$ 200
2. 8065 (6) $\rightarrow$ 60
3. 7476 (7) $\rightarrow$ 7000
4. 4046 (4) $\rightarrow$ 40
5. 2258 (2) $\rightarrow$ 200
6. 9604 (6) $\rightarrow$ 600
7. 7902 (7) $\rightarrow$ 7000
8. 4585 (5) $\rightarrow$ 500
9. 4014 (4) $\rightarrow$ 4000
10. 6209 (6) $\rightarrow$ 6000
11. 3522 (5) $\rightarrow$ 500
12. 4909 (9) $\rightarrow$ 900
13. 6507 (7) $\rightarrow$ 7
14. 3725 (3) $\rightarrow$ 3000
15. 6046 (4) $\rightarrow$ 40
16. 7032 (7) $\rightarrow$ 7000
17. 6313 (3) $\rightarrow$ 300
18. 9301 (1) $\rightarrow$ 1
19. 3054 (4) $\rightarrow$ 4
20. 6222 (2) $\rightarrow$ 200
21. 2804 (2) $\rightarrow$ 2000
22. 3506 (5) $\rightarrow$ 500
23. 8406 (4) $\rightarrow$ 400
24. 7498 (4) $\rightarrow$ 400

Writing expanded form

25. $8807 = 8000 + 800 + 7$
26. $1691 = 1000 + 600 + 90 + 1$
27. $3509 = 3000 + 500 + 9$
28. $8104 = 8000 + 100 + 4$
29. $1057 = 1000 + 50 + 7$
30. $5767 = 5000 + 700 + 60 + 7$
31. $2207 = 2000 + 200 + 7$
32. $6049 = 6000 + 40 + 9$
33. $6400 = 6000 + 400$
34. $9609 = 9000 + 600 + 9$
35. $9065 = 9000 + 60 + 5$
36. $6267 = 6000 + 200 + 60 + 7$
37. $3011 = 3000 + 10 + 1$
38. $8023 = 8000 + 20 + 3$
39. $4407 = 4000 + 400 + 7$
40. $5072 = 5000 + 70 + 2$
41. $2063 = 2000 + 60 + 3$
42. $6048 = 6000 + 40 + 8$

Place Value in Four-Digit Numbers (continued)

Writing expanded form (continued)

43. $1581 = 1000 + 500 + 80 + 1$
44. $7104 = 7000 + 100 + 4$
45. $2302 = 2000 + 300 + 2$
46. $3019 = 3000 + 10 + 9$
47. $8909 = 8000 + 900 + 9$

Rounding to the Nearest Ten

Rounding numbers

1. $713 \approx 710$
2. $172 \approx 170$
3. $72 \approx 70$
4. $17 \approx 20$
5. $947 \approx 950$
6. $751 \approx 750$
7. $74 \approx 70$
8. $21 \approx 20$
9. $305 \approx 310$
10. $539 \approx 540$
11. $531 \approx 530$
12. $327 \approx 330$
13. $303 \approx 300$
14. $311 \approx 310$
15. $82 \approx 80$
16. $589 \approx 590$
17. $639 \approx 640$
18. $499 \approx 500$
19. $716 \approx 720$
20. $675 \approx 680$
21. $491 \approx 490$
22. $542 \approx 540$
23. $147 \approx 150$
24. $963 \approx 960$
25. $126 \approx 130$
26. $957 \approx 960$
27. $304 \approx 300$

Estimating a sum

28. $126 + 422 \approx 130 + 420 = 550$
29. $119 + 697 \approx 120 + 700 = 820$
30. $105 + 147 \approx 110 + 150 = 260$
31. $126 + 235 \approx 130 + 240 = 370$
32. $119 + 664 \approx 120 + 660 = 780$
33. $105 + 829 \approx 110 + 830 = 940$
34. $147 + 576 \approx 150 + 580 = 730$

Answer Key (2 of 10)

Rounding to the Nearest Ten (continued)

Estimating a sum (continued)

35. $112 + 609 \approx 110 + 610 = 720$

Estimating a difference

36. $301 - 125 \approx 300 - 130 = 170$

37. $399 - 235 \approx 400 - 240 = 160$

38. $406 - 301 \approx 410 - 300 = 110$

39. $385 - 356 \approx 390 - 360 = 30$

40. $336 - 114 \approx 340 - 110 = 230$

41. $147 - 136 \approx 150 - 140 = 10$

42. $427 - 125 \approx 430 - 130 = 300$

43. $392 - 378 \approx 390 - 380 = 10$

Estimating a product

44. $83 \times 46 \approx 80 \times 50 = 4000$

45. $38 \times 67 \approx 40 \times 70 = 2800$

46. $47 \times 81 \approx 50 \times 80 = 4000$

47. $35 \times 39 \approx 40 \times 40 = 1600$

48. $92 \times 88 \approx 90 \times 90 = 8100$

49. $38 \times 39 \approx 40 \times 40 = 1600$

50. $65 \times 39 \approx 70 \times 40 = 2800$

51. $95 \times 53 \approx 100 \times 50 = 5000$

Column Addition and Subtraction

Add and subtract multi-digit numbers

1. $932 - 851 = 81$

2. $508 + 514 = 1022$

3. $973 - 276 = 697$

4. $962 + 608 = 1570$

5. $765 - 677 = 88$

6. $826 + 520 = 1346$

7. $796 + 511 = 1307$

8. $870 - 463 = 407$

9. $425 + 663 = 1088$

10. $935 + 909 = 1844$

11. $910 - 557 = 353$

12. $322 + 700 = 1022$

13. $562 + 708 = 1270$

14. $995 - 522 = 473$

15. $330 + 834 = 1164$

16. $515 + 783 = 1298$

17. $967 - 745 = 222$

18. $941 + 230 = 1171$

19. $858 + 561 = 1419$

20. $827 - 566 = 261$

Multiplying Two Digits by One

Multiply multi-digit numbers

1. $77 \times 3 = 231$

2. $78 \times 8 = 624$

3. $80 \times 4 = 320$

4. $81 \times 9 = 729$

5. $91 \times 3 = 273$

6. $91 \times 8 = 728$

7. $54 \times 8 = 432$

8. $53 \times 5 = 265$

9. $51 \times 8 = 408$

10. $79 \times 8 = 632$

11. $67 \times 4 = 268$

12. $56 \times 8 = 448$

13. $77 \times 6 = 462$

14. $36 \times 9 = 324$

15. $92 \times 6 = 552$

16. $98 \times 7 = 686$

17. $72 \times 3 = 216$

18. $65 \times 6 = 390$

19. $89 \times 8 = 712$

20. $79 \times 3 = 237$

21. $54 \times 7 = 378$

22. $58 \times 8 = 464$

23. $78 \times 9 = 702$

24. $56 \times 5 = 280$

The value of a digit

25. 8345 (8) $\rightarrow$ 8000

26. 1702 (7) $\rightarrow$ 700

27. 8515 (8) $\rightarrow$ 8000

28. 9505 (5) $\rightarrow$ 5

29. 4518 (5) $\rightarrow$ 500

30. 1098 (1) $\rightarrow$ 1000

31. 1013 (1) $\rightarrow$ 1000

32. 3613 (3) $\rightarrow$ 3000

33. 8102 (2) $\rightarrow$ 2

34. 1800 (1) $\rightarrow$ 1000

Multiplying Three Digits by One

Multiply multi-digit numbers

1. $395 \times 5 = 1975$

2. $586 \times 9 = 5274$

3. $219 \times 9 = 1971$

4. $892 \times 6 = 5352$

5. $903 \times 2 = 1806$

Answer Key (3 of 10)

Multiplying Three Digits by One (continued)

Multiply multi-digit numbers (continued)

6. $730 \times 5 = 3650$
7. $922 \times 4 = 3688$
8. $433 \times 5 = 2165$
9. $891 \times 9 = 8019$
10. $804 \times 9 = 7236$
11. $807 \times 4 = 3228$
12. $681 \times 9 = 6129$
13. $925 \times 8 = 7400$
14. $225 \times 8 = 1800$
15. $870 \times 8 = 6960$
16. $883 \times 7 = 6181$
17. $908 \times 3 = 2724$
18. $881 \times 8 = 7048$
19. $755 \times 9 = 6795$
20. $996 \times 3 = 2988$
21. $933 \times 6 = 5598$
22. $917 \times 8 = 7336$
23. $508 \times 8 = 4064$
24. $356 \times 8 = 2848$

Estimating a sum

25. $112 + 598 \approx 110 + 600 = 710$
26. $147 + 895 \approx 150 + 900 = 1050$
27. $119 + 334 \approx 120 + 330 = 450$
28. $105 + 906 \approx 110 + 910 = 1020$
29. $154 + 345 \approx 150 + 350 = 500$
30. $112 + 829 \approx 110 + 830 = 940$
31. $126 + 455 \approx 130 + 460 = 590$
32. $154 + 477 \approx 150 + 480 = 630$
33. $105 + 928 \approx 110 + 930 = 1040$
34. $119 + 697 \approx 120 + 700 = 820$

Multiplying Two Digits by Two

Multiply multi-digit numbers

1. $73 \times 37 = 2701$
2. $47 \times 76 = 3572$
3. $43 \times 67 = 2881$
4. $90 \times 84 = 7560$
5. $35 \times 57 = 1995$
6. $62 \times 72 = 4464$
7. $81 \times 71 = 5751$
8. $37 \times 44 = 1628$
9. $83 \times 51 = 4233$
10. $57 \times 78 = 4446$

Multiplying Two Digits by Two (continued)

Multiply multi-digit numbers (continued)

11. $36 \times 75 = 2700$
12. $89 \times 87 = 7743$
13. $59 \times 97 = 5723$
14. $47 \times 52 = 2444$
15. $68 \times 57 = 3876$

Rounding numbers

16. $231 \approx 230$
17. $546 \approx 550$
18. $547 \approx 550$
19. $66 \approx 70$
20. $909 \approx 910$
21. $259 \approx 260$
22. $72 \approx 70$
23. $262 \approx 260$
24. $569 \approx 570$
25. $539 \approx 540$

Division with Remainders

Division with remainders

1. $45 \div 4 = 11 \text{ R } 1$
2. $63 \div 8 = 7 \text{ R } 7$
3. $48 \div 5 = 9 \text{ R } 3$
4. $81 \div 8 = 10 \text{ R } 1$
5. $37 \div 6 = 6 \text{ R } 1$
6. $76 \div 9 = 8 \text{ R } 4$
7. $102 \div 9 = 11 \text{ R } 3$
8. $57 \div 7 = 8 \text{ R } 1$
9. $62 \div 8 = 7 \text{ R } 6$
10. $87 \div 8 = 10 \text{ R } 7$
11. $56 \div 6 = 9 \text{ R } 2$
12. $85 \div 7 = 12 \text{ R } 1$
13. $89 \div 8 = 11 \text{ R } 1$
14. $43 \div 8 = 5 \text{ R } 3$
15. $66 \div 9 = 7 \text{ R } 3$
16. $102 \div 8 = 12 \text{ R } 6$
17. $43 \div 4 = 10 \text{ R } 3$
18. $114 \div 9 = 12 \text{ R } 6$
19. $94 \div 8 = 11 \text{ R } 6$
20. $45 \div 6 = 7 \text{ R } 3$
21. $110 \div 9 = 12 \text{ R } 2$
22. $84 \div 9 = 9 \text{ R } 3$
23. $64 \div 5 = 12 \text{ R } 4$
24. $53 \div 6 = 8 \text{ R } 5$

Answer Key (4 of 10)

Division with Remainders (continued)

Word problems: dividing

25. $63 \div 9 = 7$ treats
26. $18 \div 2 = 9$ water bottles
27. $45 \div 5 = 9$ tickets
28. $80 \div 10 = 8$ times

Long Division

Long division

1. $411 \div 3 = 137$
2. $768 \div 8 = 96$
3. $525 \div 7 = 75$
4. $925 \div 5 = 185$
5. $560 \div 5 = 112$
6. $696 \div 3 = 232$
7. $981 \div 3 = 327$
8. $395 \div 5 = 79$
9. $850 \div 5 = 170$
10. $917 \div 7 = 131$
11. $574 \div 7 = 82$
12. $795 \div 3 = 265$

Add and subtract multi-digit numbers

13. $958 - 374 = 584$
14. $805 + 614 = 1419$
15. $914 - 311 = 603$
16. $644 + 499 = 1143$
17. $730 - 112 = 618$
18. $650 + 646 = 1296$
19. $982 + 210 = 1192$
20. $845 - 266 = 579$

Long Division with Remainders

Long division with remainders

1. $627 \div 7 = 89 \text{ R } 4$
2. $888 \div 7 = 126 \text{ R } 6$
3. $545 \div 3 = 181 \text{ R } 2$
4. $817 \div 5 = 163 \text{ R } 2$
5. $438 \div 9 = 48 \text{ R } 6$
6. $799 \div 6 = 133 \text{ R } 1$
7. $725 \div 4 = 181 \text{ R } 1$
8. $453 \div 9 = 50 \text{ R } 3$
9. $821 \div 5 = 164 \text{ R } 1$
10. $852 \div 8 = 106 \text{ R } 4$
11. $553 \div 9 = 61 \text{ R } 4$
12. $909 \div 2 = 454 \text{ R } 1$

Long Division with Remainders (continued)

Multiply multi-digit numbers

13. $25 \times 93 = 2325$
14. $45 \times 97 = 4365$
15. $72 \times 32 = 2304$
16. $78 \times 59 = 4602$
17. $68 \times 45 = 3060$
18. $55 \times 93 = 5115$
19. $96 \times 87 = 8352$
20. $38 \times 44 = 1672$

Factors

List the factors

1. $39 \rightarrow 1, 3, 13, 39$
2. $12 \rightarrow 1, 2, 3, 4, 6, 12$
3. $33 \rightarrow 1, 3, 11, 33$
4. $24 \rightarrow 1, 2, 3, 4, 6, 8, 12, 24$
5. $26 \rightarrow 1, 2, 13, 26$
6. $20 \rightarrow 1, 2, 4, 5, 10, 20$
7. $40 \rightarrow 1, 2, 4, 5, 8, 10, 20, 40$
8. $8 \rightarrow 1, 2, 4, 8$
9. $28 \rightarrow 1, 2, 4, 7, 14, 28$
10. $18 \rightarrow 1, 2, 3, 6, 9, 18$
11. $34 \rightarrow 1, 2, 17, 34$
12. $30 \rightarrow 1, 2, 3, 5, 6, 10, 15, 30$
13. $16 \rightarrow 1, 2, 4, 8, 16$
14. $22 \rightarrow 1, 2, 11, 22$
15. $32 \rightarrow 1, 2, 4, 8, 16, 32$
16. $36 \rightarrow 1, 2, 3, 4, 6, 9, 12, 18, 36$
17. $15 \rightarrow 1, 3, 5, 15$
18. $19 \rightarrow 1, 19$
19. $27 \rightarrow 1, 3, 9, 27$
20. $21 \rightarrow 1, 3, 7, 21$
21. $2 \rightarrow 1, 2$
22. $35 \rightarrow 1, 5, 7, 35$
23. $10 \rightarrow 1, 2, 5, 10$
24. $23 \rightarrow 1, 23$

Division with remainders

25. $47 \div 6 = 7 \text{ R } 5$
26. $70 \div 6 = 11 \text{ R } 4$
27. $37 \div 7 = 5 \text{ R } 2$
28. $85 \div 8 = 10 \text{ R } 5$
29. $46 \div 4 = 11 \text{ R } 2$
30. $76 \div 6 = 12 \text{ R } 4$
31. $76 \div 7 = 10 \text{ R } 6$

Answer Key (5 of 10)

Factors (continued)

Division with remainders (continued)

32. $51 \div 7 = 7 \text{ R } 2$

Multiples

Multiples

1. $19 \rightarrow 19, 38, 57, 76, 95$
2. $30 \rightarrow 30, 60, 90, 120, 150$
3. $25 \rightarrow 25, 50, 75, 100, 125$
4. $39 \rightarrow 39, 78, 117, 156, 195$
5. $27 \rightarrow 27, 54, 81, 108, 135$
6. $36 \rightarrow 36, 72, 108, 144, 180$
7. $32 \rightarrow 32, 64, 96, 128, 160$
8. $22 \rightarrow 22, 44, 66, 88, 110$
9. $35 \rightarrow 35, 70, 105, 140, 175$
10. $40 \rightarrow 40, 80, 120, 160, 200$
11. $24 \rightarrow 24, 48, 72, 96, 120$
12. $38 \rightarrow 38, 76, 114, 152, 190$
13. $34 \rightarrow 34, 68, 102, 136, 170$
14. $18 \rightarrow 18, 36, 54, 72, 90$

Circling multiples

15. $6 \rightarrow 18, 24, 30$
16. $11 \rightarrow 11, 33$
17. $7 \rightarrow 7, 28, 35$
18. $11 \rightarrow 11, 22, 33$
19. $9 \rightarrow 9, 18$
20. $11 \rightarrow 11, 22, 33$
21. $10 \rightarrow 10, 30, 40$
22. $8 \rightarrow 8, 24$

Long division

23. $670 \div 5 = 134$
24. $824 \div 8 = 103$
25. $690 \div 5 = 138$
26. $942 \div 3 = 314$
27. $458 \div 2 = 229$
28. $888 \div 6 = 148$
29. $904 \div 8 = 113$
30. $522 \div 3 = 174$

Prime and Composite Numbers

Prime or composite

1. $46 \rightarrow \text{Composite } (2 \times 23)$
2. $25 \rightarrow \text{Composite } (5 \times 5)$
3. $23 \rightarrow \text{Prime}$
4. $29 \rightarrow \text{Prime}$

Prime and Composite Numbers (continued)

Prime or composite (continued)

5. $42 \rightarrow \text{Composite } (2 \times 21)$
6. $31 \rightarrow \text{Prime}$
7. $43 \rightarrow \text{Prime}$
8. $13 \rightarrow \text{Prime}$
9. $41 \rightarrow \text{Prime}$
10. $21 \rightarrow \text{Composite } (3 \times 7)$
11. $40 \rightarrow \text{Composite } (2 \times 20)$
12. $45 \rightarrow \text{Composite } (3 \times 15)$
13. $35 \rightarrow \text{Composite } (5 \times 7)$
14. $3 \rightarrow \text{Prime}$
15. $9 \rightarrow \text{Composite } (3 \times 3)$
16. $15 \rightarrow \text{Composite } (3 \times 5)$
17. $7 \rightarrow \text{Prime}$
18. $39 \rightarrow \text{Composite } (3 \times 13)$
19. $27 \rightarrow \text{Composite } (3 \times 9)$
20. $44 \rightarrow \text{Composite } (2 \times 22)$
21. $37 \rightarrow \text{Prime}$
22. $47 \rightarrow \text{Prime}$
23. $33 \rightarrow \text{Composite } (3 \times 11)$
24. $5 \rightarrow \text{Prime}$

Long division with remainders

25. $467 \div 8 = 58 \text{ R } 3$
26. $893 \div 3 = 297 \text{ R } 2$
27. $617 \div 5 = 123 \text{ R } 2$
28. $877 \div 4 = 219 \text{ R } 1$
29. $569 \div 5 = 113 \text{ R } 4$
30. $709 \div 3 = 236 \text{ R } 1$
31. $710 \div 7 = 101 \text{ R } 3$
32. $603 \div 7 = 86 \text{ R } 1$

Adding and Subtracting Fractions

Add and subtract fractions

1. $\frac{2}{7} - \frac{1}{7} = \frac{1}{7}$
2. $\frac{6}{7} + \frac{2}{7} = \frac{8}{7}$
3. $\frac{3}{5} - \frac{2}{5} = \frac{1}{5}$
4. $\frac{3}{4} - \frac{1}{4} = \frac{1}{2}$
5. $\frac{6}{8} - \frac{5}{8} = \frac{1}{8}$
6. $\frac{4}{7} + \frac{4}{7} = \frac{8}{7}$
7. $\frac{6}{8} - \frac{3}{8} = \frac{3}{8}$
8. $\frac{4}{7} - \frac{2}{7} = \frac{2}{7}$
9. $\frac{4}{6} - \frac{3}{6} = \frac{1}{6}$
10. $\frac{7}{8} - \frac{5}{8} = \frac{1}{4}$
11. $\frac{5}{8} - \frac{4}{8} = \frac{1}{8}$

Answer Key (6 of 10)

Adding and Subtracting Fractions (continued)

Add and subtract fractions (continued)

12. $1/7 + 4/7 = 5/7$
13. $3/8 - 2/8 = 1/8$
14. $2/5 - 1/5 = 1/5$
15. $5/8 - 3/8 = 1/4$
16. $6/8 - 2/8 = 1/2$
17. $2/4 - 1/4 = 1/4$
18. $6/7 - 4/7 = 2/7$
19. $1/7 + 6/7 = 1$
20. $3/6 - 2/6 = 1/6$
21. $6/7 - 5/7 = 1/7$
22. $5/7 - 3/7 = 2/7$
23. $3/8 - 1/8 = 1/4$
24. $4/8 - 2/8 = 1/4$
25. $6/8 + 7/8 = 13/8$
26. $5/7 - 4/7 = 1/7$
27. $2/6 - 1/6 = 1/6$
28. $7/8 - 6/8 = 1/8$
29. $4/6 - 1/6 = 1/2$
30. $5/6 - 1/6 = 2/3$
31. $6/8 - 1/8 = 5/8$
32. $3/8 + 4/8 = 7/8$
33. $4/5 - 2/5 = 2/5$
34. $2/3 - 1/3 = 1/3$
35. $6/7 - 2/7 = 4/7$
36. $5/6 - 4/6 = 1/6$
37. $3/7 - 2/7 = 1/7$
38. $3/6 + 3/6 = 1$
39. $6/7 - 3/7 = 3/7$
40. $5/8 - 1/8 = 1/2$
41. $4/7 - 1/7 = 3/7$
42. $7/8 - 1/8 = 3/4$

List the factors

43. $8 \rightarrow 1, 2, 4, 8$
44. $24 \rightarrow 1, 2, 3, 4, 6, 8, 12, 24$
45. $6 \rightarrow 1, 2, 3, 6$
46. $18 \rightarrow 1, 2, 3, 6, 9, 18$
47. $27 \rightarrow 1, 3, 9, 27$
48. $30 \rightarrow 1, 2, 3, 5, 6, 10, 15, 30$
49. $32 \rightarrow 1, 2, 4, 8, 16, 32$
50. $15 \rightarrow 1, 3, 5, 15$
51. $20 \rightarrow 1, 2, 4, 5, 10, 20$
52. $40 \rightarrow 1, 2, 4, 5, 8, 10, 20, 40$

Mixed Numbers

Adding mixed numbers

1. $4\frac{4}{7} + 4\frac{4}{7} = 9\frac{1}{7}$
2. $3\frac{6}{7} + 5\frac{6}{7} = 9\frac{5}{7}$
3. $5\frac{1}{7} + 4\frac{4}{7} = 9\frac{5}{7}$
4. $5\frac{2}{5} + 3\frac{4}{5} = 9\frac{1}{5}$
5. $1\frac{4}{5} + 2\frac{1}{5} = 4$
6. $1\frac{5}{8} + 5\frac{5}{8} = 7\frac{1}{4}$
7. $5\frac{1}{8} + 3\frac{5}{8} = 8\frac{3}{4}$
8. $5\frac{4}{5} + 1\frac{2}{5} = 7\frac{1}{5}$
9. $2\frac{2}{5} + 5\frac{3}{5} = 8$
10. $2\frac{1}{5} + 4\frac{3}{5} = 6\frac{4}{5}$
11. $2\frac{4}{5} + 4\frac{1}{5} = 7$
12. $1\frac{5}{8} + 2\frac{5}{8} = 4\frac{1}{4}$
13. $2\frac{3}{7} + 4\frac{2}{7} = 6\frac{5}{7}$
14. $3\frac{1}{8} + 3\frac{7}{8} = 7$
15. $2\frac{3}{7} + 2\frac{1}{7} = 4\frac{4}{7}$
16. $4\frac{6}{7} + 3\frac{1}{7} = 8$
17. $2\frac{3}{5} + 3\frac{3}{5} = 6\frac{1}{5}$
18. $4\frac{3}{7} + 3\frac{3}{7} = 7\frac{6}{7}$
19. $3\frac{4}{7} + 2\frac{4}{7} = 6\frac{1}{7}$
20. $1\frac{1}{7} + 4\frac{6}{7} = 6$
21. $4\frac{3}{7} + 5\frac{1}{7} = 9\frac{4}{7}$
22. $2\frac{5}{8} + 3\frac{3}{8} = 6$
23. $5\frac{3}{4} + 2\frac{3}{4} = 8\frac{1}{2}$
24. $1\frac{2}{7} + 1\frac{3}{7} = 2\frac{5}{7}$
25. $3\frac{5}{8} + 5\frac{7}{8} = 9\frac{1}{2}$
26. $2\frac{5}{8} + 1\frac{7}{8} = 4\frac{1}{2}$
27. $1\frac{5}{8} + 1\frac{1}{8} = 2\frac{3}{4}$
28. $1\frac{4}{5} + 1\frac{2}{5} = 3\frac{1}{5}$
29. $5\frac{1}{5} + 5\frac{4}{5} = 11$
30. $2\frac{4}{7} + 3\frac{1}{7} = 5\frac{5}{7}$
31. $5\frac{1}{6} + 1\frac{5}{6} = 7$
32. $1\frac{5}{8} + 1\frac{5}{8} = 3\frac{1}{4}$
33. $2\frac{1}{7} + 3\frac{3}{7} = 5\frac{4}{7}$
34. $2\frac{3}{7} + 4\frac{4}{7} = 7$
35. $2\frac{3}{4} + 3\frac{3}{4} = 6\frac{1}{2}$
36. $2\frac{3}{8} + 3\frac{1}{8} = 5\frac{1}{2}$
37. $5\frac{6}{7} + 4\frac{2}{7} = 10\frac{1}{7}$
38. $2\frac{5}{8} + 1\frac{5}{8} = 4\frac{1}{4}$
39. $2\frac{2}{7} + 5\frac{4}{7} = 7\frac{6}{7}$
40. $4\frac{2}{7} + 4\frac{5}{7} = 9$
41. $5\frac{1}{7} + 2\frac{4}{7} = 7\frac{5}{7}$

Multiples

42. $20 \rightarrow 20, 40, 60, 80, 100$

Answer Key (7 of 10)

Mixed Numbers (continued)

Multiples (continued)

- 43. $33 \rightarrow 33, 66, 99, 132, 165$
- 44. $24 \rightarrow 24, 48, 72, 96, 120$
- 45. $37 \rightarrow 37, 74, 111, 148, 185$
- 46. $25 \rightarrow 25, 50, 75, 100, 125$
- 47. $31 \rightarrow 31, 62, 93, 124, 155$
- 48. $40 \rightarrow 40, 80, 120, 160, 200$
- 49. $27 \rightarrow 27, 54, 81, 108, 135$
- 50. $39 \rightarrow 39, 78, 117, 156, 195$
- 51. $29 \rightarrow 29, 58, 87, 116, 145$

Tenths and Hundredths

What the digit is worth

- 1. 44.19 (9) $\rightarrow 0.09$
- 2. 89.82 (8) $\rightarrow 0.8$
- 3. 46.65 (5) $\rightarrow 0.05$
- 4. 88.33 (3) $\rightarrow 0.3$
- 5. 48.97 (9) $\rightarrow 0.9$
- 6. 75.01 (1) $\rightarrow 0.01$
- 7. 77.32 (3) $\rightarrow 0.3$
- 8. 68.27 (2) $\rightarrow 0.2$
- 9. 76.95 (5) $\rightarrow 0.05$
- 10. 84.85 (8) $\rightarrow 0.8$
- 11. 37.74 (7) $\rightarrow 0.7$
- 12. 75.73 (3) $\rightarrow 0.03$
- 13. 77.75 (5) $\rightarrow 0.05$
- 14. 56.60 (6) $\rightarrow 0.6$
- 15. 86.81 (1) $\rightarrow 0.01$
- 16. 74.37 (7) $\rightarrow 0.07$
- 17. 67.66 (6) $\rightarrow 0.6$
- 18. 74.94 (4) $\rightarrow 0.04$
- 19. 89.05 (5) $\rightarrow 0.05$
- 20. 62.60 (6) $\rightarrow 0.6$
- 21. 98.82 (2) $\rightarrow 0.02$
- 22. 91.27 (2) $\rightarrow 0.2$
- 23. 98.28 (2) $\rightarrow 0.2$
- 24. 39.32 (2) $\rightarrow 0.02$

Naming the place

- 25. $50.97 \rightarrow$ tenths
- 26. $72.52 \rightarrow$ hundredths
- 27. $47.88 \rightarrow$ hundredths
- 28. $82.14 \rightarrow$ hundredths
- 29. $58.38 \rightarrow$ hundredths
- 30. $67.58 \rightarrow$ tenths

Tenths and Hundredths (continued)

Naming the place (continued)

- 31. $66.17 \rightarrow$ hundredths
- 32. $51.37 \rightarrow$ hundredths
- 33. $72.23 \rightarrow$ tenths
- 34. $91.46 \rightarrow$ tenths
- 35. $50.14 \rightarrow$ hundredths
- 36. $69.39 \rightarrow$ tenths
- 37. $67.67 \rightarrow$ tenths
- 38. $40.59 \rightarrow$ hundredths
- 39. $64.97 \rightarrow$ tenths
- 40. $77.29 \rightarrow$ tenths
- 41. $54.41 \rightarrow$ tenths
- 42. $76.45 \rightarrow$ hundredths
- 43. $98.13 \rightarrow$ tenths
- 44. $35.72 \rightarrow$ hundredths
- 45. $99.18 \rightarrow$ hundredths
- 46. $98.85 \rightarrow$ hundredths
- 47. $94.17 \rightarrow$ tenths
- 48. $54.26 \rightarrow$ tenths

Prime or composite

- 49. $50 \rightarrow$ Composite (2×25)
- 50. $39 \rightarrow$ Composite (3×13)
- 51. $7 \rightarrow$ Prime
- 52. $9 \rightarrow$ Composite (3×3)
- 53. $2 \rightarrow$ Prime
- 54. $43 \rightarrow$ Prime
- 55. $45 \rightarrow$ Composite (3×15)
- 56. $11 \rightarrow$ Prime
- 57. $25 \rightarrow$ Composite (5×5)
- 58. $31 \rightarrow$ Prime

Comparing Decimals

Compare decimals

- 1. $6.3 < 7.2$
- 2. $3.12 < 5.71$
- 3. $1.94 < 2.17$
- 4. $7.78 < 9.2$
- 5. $1.89 > 1.16$
- 6. $4.24 > 3.0$
- 7. $6.13 > 4.87$
- 8. $6.2 > 5.2$
- 9. $4.71 < 8.5$
- 10. $4.95 < 6.1$
- 11. $6.9 > 5.47$

Answer Key (8 of 10)

Comparing Decimals (continued)

Compare decimals (continued)

12. $7.32 > 4.46$
13. $2.95 < 3.06$
14. $8.6 > 5.5$
15. $7.65 > 0.96$
16. $6.17 > 3.8$
17. $6.5 > 1.54$
18. $2.92 < 8.4$
19. $5.69 > 2.04$
20. $9.3 > 3.2$
21. $5.21 > 1.57$
22. $7.06 > 0.5$
23. $9.60 > 3.3$
24. $6.6 < 9.6$
25. $7.40 < 9.81$
26. $4.14 > 2.83$
27. $1.56 < 4.1$
28. $6.28 < 8.56$
29. $7.31 < 8.09$
30. $6.5 > 1.22$

Rounding numbers

31. $389 \approx 390$
32. $222 \approx 220$
33. $617 \approx 620$
34. $891 \approx 890$
35. $111 \approx 110$
36. $585 \approx 590$
37. $878 \approx 880$
38. $867 \approx 870$
39. $284 \approx 280$
40. $374 \approx 370$
41. $462 \approx 460$
42. $164 \approx 160$
43. $206 \approx 210$
44. $643 \approx 640$
45. $888 \approx 890$
46. $276 \approx 280$
47. $571 \approx 570$
48. $745 \approx 750$
49. $765 \approx 770$
50. $776 \approx 780$

Types of Angle

Acute, right, or obtuse

1. 120° : obtuse
2. 75° : acute
3. 50° : acute
4. 65° : acute
5. 60° : acute
6. 80° : acute
7. 115° : obtuse
8. 40° : acute
9. 70° : acute

Add and subtract fractions

10. $4/6 - 1/6 = 1/2$
11. $1/6 + 2/6 = 1/2$
12. $3/5 - 1/5 = 2/5$
13. $6/7 - 4/7 = 2/7$
14. $4/7 - 1/7 = 3/7$
15. $4/6 + 3/6 = 7/6$
16. $3/8 - 2/8 = 1/8$
17. $4/5 - 2/5 = 2/5$
18. $7/8 - 4/8 = 3/8$

Types of Triangle

Classify triangles by angles or sides

1. 10, 14, 14: isosceles
2. 13, 15, 15: isosceles
3. 4, 6, 7: scalene
4. 18, 18, 18: equilateral
5. 6, 9, 11: scalene
6. 5, 6, 7: scalene
7. 12, 12, 13: isosceles
8. 7, 8, 11: scalene

Adding mixed numbers

9. $3 \frac{1}{8} + 1 \frac{7}{8} = 5$
10. $3 \frac{6}{7} + 1 \frac{4}{7} = 5 \frac{3}{7}$
11. $2 \frac{1}{7} + 2 \frac{2}{7} = 4 \frac{3}{7}$
12. $5 \frac{3}{5} + 2 \frac{3}{5} = 8 \frac{1}{5}$
13. $5 \frac{7}{8} + 2 \frac{5}{8} = 8 \frac{1}{2}$
14. $5 \frac{6}{7} + 2 \frac{4}{7} = 8 \frac{3}{7}$
15. $4 \frac{1}{5} + 4 \frac{3}{5} = 8 \frac{4}{5}$
16. $1 \frac{3}{8} + 2 \frac{7}{8} = 4 \frac{1}{4}$

Lines of Symmetry

Lines of symmetry

1. isosceles triangle turned 45° : 1

Answer Key (9 of 10)

Lines of Symmetry (continued)

Lines of symmetry (continued)

2. parallelogram: 0
3. regular octagon turned 45° : 8
4. parallelogram turned 45° : 0
5. isosceles trapezoid turned 20° : 1
6. scalene triangle turned 20° : 0
7. parallelogram turned 20° : 0
8. isosceles triangle: 1
9. rhombus turned 20° : 2
10. rhombus turned 45° : 2

What the digit is worth

11. 37.32 (2) $\rightarrow$ 0.02
12. 75.67 (6) $\rightarrow$ 0.6
13. 48.18 (1) $\rightarrow$ 0.1
14. 81.26 (6) $\rightarrow$ 0.06
15. 60.34 (3) $\rightarrow$ 0.3
16. 98.53 (5) $\rightarrow$ 0.5
17. 80.95 (5) $\rightarrow$ 0.05
18. 58.71 (7) $\rightarrow$ 0.7
19. 92.58 (5) $\rightarrow$ 0.5
20. 99.18 (8) $\rightarrow$ 0.08

Number Patterns

Number patterns

1. 8, 18, 28, [38], 48
2. 1, [9], 17, 25, 33
3. 6, 14, 22, [30], 38
4. 5, 13, 21, [29], 37
5. 9, [14], 19, 24, 29
6. 3, 9, [15], 21, 27
7. 6, [17], 28, 39, 50
8. 8, 16, 24, [32], 40
9. 4, 15, 26, [37], 48
10. 1, 9, [17], 25, 33
11. 5, 9, [13], 17, 21
12. 6, 9, 12, [15], 18
13. 8, 11, 14, [17], 20
14. 8, [10], 12, 14, 16
15. 2, 13, [24], 35, 46
16. 2, 7, 12, [17], 22
17. 1, 11, [21], 31, 41
18. 7, 14, 21, [28], 35
19. 9, [12], 15, 18, 21
20. 9, [16], 23, 30, 37

Number Patterns (continued)

Number patterns (continued)

21. 8, 10, 12, [14], 16
22. 9, 11, [13], 15, 17
23. 9, 16, 23, [30], 37
24. 4, [10], 16, 22, 28

Compare decimals

25. $7.4 = 7.40$
26. $7.32 > 4.46$
27. $1.20 < 4.1$
28. $7.51 < 7.86$
29. $7.2 > 2.6$
30. $9.14 > 1.3$
31. $3.66 < 5.6$
32. $6.5 > 1.54$
33. $4.14 > 2.5$
34. $3.43 < 8.53$

Line Plots and Bar Graphs

Line plots

1. 3 at 7 inches, 2 at 4 inches: $3 - 2 = 1$
2. $2 + 2 + 1 + 3 + 2 + 1 + 4 = 15$
3. longer than 4 inches — 11 plants

Bar graphs

4. Running is $8 - 2 = 6$ more than Football
5. Swimming is $8 - 6 = 2$ fewer than Running
6. $2 + 6 + 8 + 7 = 23$

Spot the Mistake

Spot the error

1. $53 - 20 = 33$, not 23 (a ten was paid back that had never been borrowed)
2. $3 \times 3 = 9$, not 6 (the count is one group short)
3. $16 - 3 = 13$, not 3 (a ten was paid back that had never been borrowed)
4. $4 \times 9 = 36$, not 32 (the count is one group short)
5. $47 - 13 = 34$, not 24 (a ten was paid back that had never been borrowed)
6. $7 \times 9 = 63$, not 16 (the numbers were added instead of multiplied)
7. $6 \times 8 = 48$, not 14 (the numbers were added instead of multiplied)
8. $10 \times 11 = 110$, not 21 (the numbers were added instead of multiplied)

Answer Key (10 of 10)

Review: Multiplying

Multiply multi-digit numbers

1. $993 \times 29 = 28797$
2. $721 \times 57 = 41097$
3. $933 \times 28 = 26124$
4. $898 \times 71 = 63758$
5. $452 \times 54 = 24408$
6. $602 \times 66 = 39732$
7. $566 \times 76 = 43016$
8. $392 \times 55 = 21560$
9. $648 \times 99 = 64152$
10. $547 \times 71 = 38837$
11. $885 \times 25 = 22125$
12. $985 \times 97 = 95545$
13. $625 \times 72 = 45000$
14. $350 \times 55 = 19250$
15. $810 \times 59 = 47790$

Number patterns

16. 8, [20], 32, 44, 56
17. 3, 8, 13, [18], 23
18. 2, [14], 26, 38, 50
19. 3, 14, [25], 36, 47
20. 7, 11, 15, [19], 23
21. 1, [7], 13, 19, 25
22. 3, 15, 27, [39], 51
23. 1, 11, [21], 31, 41
24. 7, 18, 29, [40], 51
25. 6, 17, [28], 39, 50

Review: Division and Factors

Division with remainders

1. $57 \div 5 = 11 \text{ R } 2$
2. $112 \div 9 = 12 \text{ R } 4$
3. $47 \div 5 = 9 \text{ R } 2$
4. $77 \div 8 = 9 \text{ R } 5$
5. $43 \div 6 = 7 \text{ R } 1$
6. $86 \div 9 = 9 \text{ R } 5$
7. $63 \div 8 = 7 \text{ R } 7$
8. $46 \div 5 = 9 \text{ R } 1$
9. $100 \div 9 = 11 \text{ R } 1$
10. $82 \div 8 = 10 \text{ R } 2$
11. $49 \div 8 = 6 \text{ R } 1$
12. $90 \div 7 = 12 \text{ R } 6$

Review: Division and Factors (continued)

Division with remainders (continued)

13. $75 \div 8 = 9 \text{ R } 3$
14. $52 \div 9 = 5 \text{ R } 7$

List the factors

15. $39 \rightarrow 1, 3, 13, 39$
16. $32 \rightarrow 1, 2, 4, 8, 16, 32$
17. $14 \rightarrow 1, 2, 7, 14$
18. $16 \rightarrow 1, 2, 4, 8, 16$
19. $27 \rightarrow 1, 3, 9, 27$
20. $18 \rightarrow 1, 2, 3, 6, 9, 18$
21. $24 \rightarrow 1, 2, 3, 4, 6, 8, 12, 24$
22. $8 \rightarrow 1, 2, 4, 8$
23. $28 \rightarrow 1, 2, 4, 7, 14, 28$
24. $30 \rightarrow 1, 2, 3, 5, 6, 10, 15, 30$
25. $26 \rightarrow 1, 2, 13, 26$
26. $12 \rightarrow 1, 2, 3, 4, 6, 12$
27. $40 \rightarrow 1, 2, 4, 5, 8, 10, 20, 40$
28. $15 \rightarrow 1, 3, 5, 15$

Solutions (1 of 20)

Place Value in Four-Digit Numbers

The value of a digit

1. $7\textcolor{red}{2}64 \rightarrow \underline{\hspace{2cm}}$

number: 7 $\textcolor{blue}{2}$ 6 4
2 $\rightarrow$ $\textcolor{blue}{200}$

Each column is worth ten times the one to its right. Counting them is what tells you the value; the name on its own is the thing that goes wrong under pressure.

Count in from the right: the 2 sits in the hundreds. Its VALUE is what it is worth there, not the digit itself: 2 in the hundreds is 200. That gap between "2" and "200" is the whole of this topic.

2. $80\textcolor{red}{6}5 \rightarrow \underline{\hspace{2cm}}$

number: 8 0 $\textcolor{blue}{6}$ 5
6 $\rightarrow$ $\textcolor{blue}{60}$

Each column is worth ten times the one to its right. Counting them is what tells you the value; the name on its own is the thing that goes wrong under pressure.

Count in from the right: the 6 sits in the tens. Its VALUE is what it is worth there, not the digit itself: 6 in the tens is 60. That gap between "6" and "60" is the whole of this topic.

Rounding to the Nearest Ten

Rounding numbers

1. $713 \approx \underline{\hspace{2cm}}$

7 $\textcolor{blue}{1}$ $\textcolor{blue}{3}$
713 $\rightarrow$ $\textcolor{blue}{710}$

Find the tens digit first — that is the one that might change.

Now look at the single digit just after it: 3. Nothing further along matters at all.

3 is less than 5, so 713 is nearer 710 than 720. It stays down.

So 713 to the nearest ten is 710.

Solutions (2 of 20)

Rounding to the Nearest Ten (continued)

Rounding numbers (continued)

2. $172 \approx \underline{\hspace{2cm}}$

$$\begin{array}{ccc} 1 & 7 & 2 \\ 172 & \rightarrow & 170 \end{array}$$

Find the tens digit first — that is the one that might change.

Now look at the single digit just after it: 2. Nothing further along matters at all.

2 is less than 5, so 172 is nearer 170 than 180. It stays down.

So 172 to the nearest ten is 170.

Estimating a sum

28. $126 + 422 \approx \underline{\hspace{2cm}}$

$$\begin{array}{rcl} 126 & + & 422 \\ 130 & + & 422 \\ 130 & + & 420 \\ & & 550 \end{array}$$

Do not work it out exactly. Round each number first. 126 is nearer 130 than 120, so to the nearest ten it becomes 130.

422 is nearer 420 than 430, so to the nearest ten it becomes 420.

Now it is easy enough to do in your head: $130 + 420 = 550$.

The exact answer is 548, so the estimate of 550 is 2 away. Close enough to catch a wrong answer with, and you did it in your head.

29. $119 + 697 \approx \underline{\hspace{2cm}}$

$$\begin{array}{rcl} 119 & + & 697 \\ 120 & + & 697 \\ 120 & + & 700 \\ & & 820 \end{array}$$

Do not work it out exactly. Round each number first. 119 is nearer 120 than 110, so to the nearest ten it becomes 120.

697 is nearer 700 than 690, so to the nearest ten it becomes 700.

Now it is easy enough to do in your head: $120 + 700 = 820$.

The exact answer is 816, so the estimate of 820 is 4 away. Close enough to catch a wrong answer with, and you did it in your head.

Solutions (3 of 20)

Column Addition and Subtraction

Add and subtract multi-digit numbers

1.

$$\begin{array}{r} 8 \quad 13 \\ \cancel{9} \quad \cancel{2} \quad 2 \\ - 8 \quad 5 \quad 1 \\ \hline 8 \quad 1 \end{array}$$

932 – 851, written in columns. Start at the RIGHT, with the ones.

2 take away 1 leaves 1. Write it in the ones.

3 is too small to take 5 from, so a ten comes across from the left: the tens now holds 13. 13 – 5 = 8.

This column gave a ten to the right, so it is now 8, not 9. 8 – 8 = 0. That 0 would sit in front of the answer, so nothing is written in the hundreds.

That is the whole sum: 932 – 851 = 81.

2.

$$\begin{array}{r} 1 \quad \quad 1 \\ 5 \quad 0 \quad 8 \\ + 5 \quad 1 \quad 4 \\ \hline 1 \quad 0 \quad 2 \quad 2 \end{array}$$

508 + 514, written in columns. Start at the RIGHT, with the ones.

8 plus 4 makes 12. That is more than 9, so write 2 in the ones and carry 1 to the left.

Add the carried 1 as well: 1 + 0 + 1 makes 2. Write 2 in the tens.

5 plus 5 makes 10. That is more than 9, so write 0 in the hundreds and carry 1 to the left.

Nothing is left to add in the thousands, but a 1 was carried in — so the thousands is 1.

That is the whole sum: 508 + 514 = 1022.

Multiplying Two Digits by One

Multiply multi-digit numbers

1.

$$\begin{array}{r} 77 \\ \times 3 \\ \hline 231 \end{array}$$

77 × 3, set out in columns. Multiply one place at a time, starting at the ones on the RIGHT.

The ones: 7 × 3 = 21. Write the 1 and carry the 2.

The tens: 7 × 3 = 21, and the 2 carried over makes 23. Nothing further to carry into, so all of 23 is written down.

So 77 × 3 = 231.

Solutions (4 of 20)

Multiplying Two Digits by One (continued)

Multiply multi-digit numbers (continued)

2.

$$\begin{array}{r} 78 \\ \times 8 \\ \hline 624 \end{array}$$

78×8 , set out in columns. Multiply one place at a time, starting at the ones on the RIGHT.

The ones: $8 \times 8 = 64$. Write the 4 and carry the 6.

The tens: $7 \times 8 = 56$, and the 6 carried over makes 62. Nothing further to carry into, so all of 62 is written down.

So $78 \times 8 = 624$.

Division with Remainders

Division with remainders

1.

$$\begin{array}{r} 11 \\ 4 \overline{)45} \\ \underline{4} \\ 5 \\ \underline{4} \\ 1 \end{array}$$

45 shared into groups of 4. Long division starts at the LEFT — the other way round from adding.

Start at the left. How many 4s fit into 4? 1 of them — write the 1 on top. $1 \times 4 = 4$, and $4 - 4$ leaves 0. Bring down the 5, which makes 5.

How many 4s fit into 5? 1 — write it on top. $1 \times 4 = 4$, and $5 - 4$ leaves 1.

Nothing is left to bring down, and 1 is too small to divide again — so that is the remainder. $45 \div 4 = 11$ remainder 1.

2.

$$\begin{array}{r} 7 \\ 8 \overline{)63} \\ \underline{56} \\ 7 \end{array}$$

63 shared into groups of 8. Long division starts at the LEFT — the other way round from adding.

Start at the left. How many 8s fit into 63? 7 of them — write the 7 on top. $7 \times 8 = 56$, and $63 - 56$ leaves 7.

Nothing is left to bring down, and 7 is too small to divide again — so that is the remainder. $63 \div 8 = 7$ remainder 7.

Solutions (5 of 20)

Division with Remainders (continued)

Word problems: dividing

25. 63 treats are arranged in 9 rows, with the same number in every row. Courtney also keeps 2 carrots.

How many treats stand in one row? ____

asked:

How many treats stand in one row?

$$63 \div 9 = 7$$

7 treats

Read it through once and do NOTHING. Grabbing the numbers on the first read means choosing an operation before you know the story, and that choice is the only hard part of a word problem.

Now the numbers: 63 and 9. Finding them is not the same as knowing what to do with them — that comes next, and it comes from the story rather than from the numbers.

One amount split into equal parts. So this one is a division: $63 \div 9$.

$63 \div 9 = 7$ treats. And answer the question that was ASKED — "How many treats stand in one row?" — in treats, because the sum on its own is not yet an answer.

26. Courtney has 18 water bottles, which is 2 times as many as Milo has.

How many water bottles does Milo have? ____

asked:

How many water bottles does Milo have?

$$18 \div 2 = 9$$

9 water bottles

Read it through once and do NOTHING. Grabbing the numbers on the first read means choosing an operation before you know the story, and that choice is the only hard part of a word problem.

Now the numbers: 18 and 2. Finding them is not the same as knowing what to do with them — that comes next, and it comes from the story rather than from the numbers.

One amount split into equal parts. So this one is a division: $18 \div 2$.

$18 \div 2 = 9$ water bottles. And answer the question that was ASKED — "How many water bottles does Milo have?" — in water bottles, because the sum on its own is not yet an answer.

Solutions (6 of 20)

Long Division

Long division

1.

$$\begin{array}{r} 137 \\ 3 \overline{)411} \\ \underline{3} \\ 11 \\ \underline{9} \\ 21 \\ \underline{21} \\ 0 \end{array}$$

411 shared into groups of 3. Long division starts at the LEFT — the other way round from adding.

Start at the left. How many 3s fit into 4? 1 of them — write the 1 on top. $1 \times 3 = 3$, and $4 - 3$ leaves 1. Bring down the 1, which makes 11.

How many 3s fit into 11? 3 — write it on top. $3 \times 3 = 9$, and $11 - 9$ leaves 2. Bring down the 1, which makes 21.

How many 3s fit into 21? 7 — write it on top. $7 \times 3 = 21$, and $21 - 21$ leaves 0.

Nothing is left to bring down and nothing is left over. $411 \div 3 = 137$.

2.

$$\begin{array}{r} 96 \\ 8 \overline{)768} \\ \underline{72} \\ 48 \\ \underline{48} \\ 0 \end{array}$$

768 shared into groups of 8. Long division starts at the LEFT — the other way round from adding.

Start at the left. How many 8s fit into 76? 9 of them — write the 9 on top. $9 \times 8 = 72$, and $76 - 72$ leaves 4. Bring down the 8, which makes 48.

How many 8s fit into 48? 6 — write it on top. $6 \times 8 = 48$, and $48 - 48$ leaves 0.

Nothing is left to bring down and nothing is left over. $768 \div 8 = 96$.

Long Division with Remainders

Long division with remainders

1.

$$\begin{array}{r} 89 \\ 7 \overline{)627} \\ \underline{56} \\ 67 \\ \underline{63} \\ 4 \end{array}$$

627 shared into groups of 7. Long division starts at the LEFT — the other way round from adding.

Start at the left. How many 7s fit into 62? 8 of them — write the 8 on top. $8 \times 7 = 56$, and $62 - 56$ leaves 6. Bring down the 7, which makes 67.

How many 7s fit into 67? 9 — write it on top. $9 \times 7 = 63$, and $67 - 63$ leaves 4.

Nothing is left to bring down, and 4 is too small to divide again — so that is the remainder. $627 \div 7 = 89$ remainder 4.

Solutions (7 of 20)

Long Division with Remainders (continued)

Long division with remainders (continued)

2.

$$\begin{array}{r} 126 \\ 7 \overline{)888} \\ \underline{7} \\ 18 \\ \underline{14} \\ 48 \\ \underline{42} \\ 6 \end{array}$$

888 shared into groups of 7. Long division starts at the LEFT — the other way round from adding.

Start at the left. How many 7s fit into 8? 1 of them — write the 1 on top. $1 \times 7 = 7$, and $8 - 7$ leaves 1. Bring down the 8, which makes 18.

How many 7s fit into 18? 2 — write it on top. $2 \times 7 = 14$, and $18 - 14$ leaves 4. Bring down the 8, which makes 48.

How many 7s fit into 48? 6 — write it on top. $6 \times 7 = 42$, and $48 - 42$ leaves 6.

Nothing is left to bring down, and 6 is too small to divide again — so that is the remainder. $888 \div 7 = 126$ remainder 6.

Factors

List the factors

1. 39 → _____

so far: 1 3 13 39

Factors come in PAIRS — every one you find hands you a second. So work in from both ends rather than trying every number in turn.

$1 \times 39 = 39$, so 1 and 39 are both factors.

$3 \times 13 = 39$, so 3 and 13 are both factors.

The pair has met in the middle, so the list is finished: 1, 3, 13, 39. 4 factors.

2. 12 → _____

so far: 1 2 3 4 6 12

Factors come in PAIRS — every one you find hands you a second. So work in from both ends rather than trying every number in turn.

$1 \times 12 = 12$, so 1 and 12 are both factors.

$2 \times 6 = 12$, so 2 and 6 are both factors.

$3 \times 4 = 12$, so 3 and 4 are both factors.

The pair has met in the middle, so the list is finished: 1, 2, 3, 4, 6, 12. 6 factors.

Solutions (8 of 20)

Multiples

Multiples

1. 19 → _____

count: 19 38 57 76
95

Multiples of 19 are what you get COUNTING IN 19s — they start at 19 and only get bigger. (Factors are the other way: they go into 19 and are never bigger than it. The two words are swapped more often than either is misunderstood.)

So just count: 19, 38, 57, 76, 95. Each one is 19 more than the last — no dividing, no testing.

2. 30 → _____

count: 30 60 90 120
150

Multiples of 30 are what you get COUNTING IN 30s — they start at 30 and only get bigger. (Factors are the other way: they go into 30 and are never bigger than it. The two words are swapped more often than either is misunderstood.)

So just count: 30, 60, 90, 120, 150. Each one is 30 more than the last — no dividing, no testing.

Prime and Composite Numbers

Prime or composite

1. 46 Prime / Composite

tried: 2
 $46 \div 2 = 23$

A prime has exactly two factors: 1 and itself. So the question is whether anything ELSE divides into 46.

You do not have to try everything up to 46. Factors come in pairs, so if one were bigger than 6 its partner would be smaller — and you would have found that one first. Testing up to 6 is enough.

2 goes into 46 exactly ($46 \div 2 = 23$), and that is one factor too many. 46 is composite — no need to test any further.

Solutions (9 of 20)

Prime and Composite Numbers (continued)

Prime or composite (continued)

2. 25 Prime / Composite

$$\begin{array}{l} \text{tried: } 2 \quad 3 \quad 4 \quad \mathbf{5} \\ 25 \div 5 = \mathbf{5} \end{array}$$

A prime has exactly two factors: 1 and itself. So the question is whether anything ELSE divides into 25.

You do not have to try everything up to 25. Factors come in pairs, so if one were bigger than 5 its partner would be smaller — and you would have found that one first. Testing up to 5 is enough.

5 goes into 25 exactly ($25 \div 5 = 5$), and that is one factor too many. 25 is composite — no need to test any further.

Adding and Subtracting Fractions

Add and subtract fractions

1. $\frac{2}{7} - \frac{1}{7} = \text{—}$

$$\begin{array}{r} \frac{2}{7} \quad - \quad \frac{1}{7} \\ \frac{2}{7} \quad - \quad \frac{1}{7} \quad = \quad \mathbf{\frac{1}{7}} \end{array}$$

Both are sevenths, so the pieces are already the same size. That is what lets them be counted together.

2 of them take away 1 of them is 1 of them: $\frac{1}{7}$. The bottom does not change — the pieces did not change size.

2. $\frac{6}{7} + \frac{2}{7} = \text{—}$

$$\begin{array}{r} \frac{6}{7} \quad + \quad \frac{2}{7} \\ \frac{6}{7} \quad + \quad \frac{2}{7} \quad = \quad \mathbf{\frac{8}{7}} \end{array}$$

Both are sevenths, so the pieces are already the same size. That is what lets them be counted together.

6 of them plus 2 of them is 8 of them: $\frac{8}{7}$. The bottom does not change — the pieces did not change size.

Solutions (10 of 20)

Mixed Numbers

Adding mixed numbers

1. $4\frac{4}{7} + 4\frac{4}{7} = \underline{\hspace{1cm}} \underline{\hspace{1cm}}$

$$\begin{array}{rclcl} \frac{4}{7} & + & \frac{4}{7} & = & \frac{8}{7} \\ 4 & + & 4 & = & 8 \\ & & = & 9 & \frac{1}{7} \end{array}$$

A mixed number is a whole and a fraction stuck together. Deal with them separately — wholes with wholes, sevenths with sevenths.

The fractions go together first: $\frac{4}{7} + \frac{4}{7} = \frac{8}{7}$.

Then the wholes: $4 + 4 = 8$.

But $\frac{8}{7}$ is more than one whole — $\frac{7}{7}$ is 1 — so it splits into 1 and $\frac{1}{7}$. Give that whole one to the wholes: $8 + 1 = 9$.

So the answer is $9\frac{1}{7}$.

2. $3\frac{6}{7} + 5\frac{6}{7} = \underline{\hspace{1cm}} \underline{\hspace{1cm}}$

$$\begin{array}{rclcl} \frac{6}{7} & + & \frac{6}{7} & = & \frac{12}{7} \\ 3 & + & 5 & = & 8 \\ & & = & 9 & \frac{5}{7} \end{array}$$

A mixed number is a whole and a fraction stuck together. Deal with them separately — wholes with wholes, sevenths with sevenths.

The fractions go together first: $\frac{6}{7} + \frac{6}{7} = \frac{12}{7}$.

Then the wholes: $3 + 5 = 8$.

But $\frac{12}{7}$ is more than one whole — $\frac{7}{7}$ is 1 — so it splits into 1 and $\frac{5}{7}$. Give that whole one to the wholes: $8 + 1 = 9$.

So the answer is $9\frac{5}{7}$.

Solutions (11 of 20)

Tenths and Hundredths

What the digit is worth

1. $44.\underline{1}9 \rightarrow$ _____

number: 4 4 . 1 9
9 $\rightarrow$ 0.09

The places do not mirror each other around the point — there is no "oneths". Going right they are tenths, hundredths, thousandths: each one ten times SMALLER than the last.

Count in from the point: the 9 sits in the hundredths.

Its VALUE is what it is worth there, not the digit itself: 9 in the hundredths is 0.09. That gap between "9" and "0.09" is the whole of this topic.

2. $89.\underline{8}2 \rightarrow$ _____

number: 8 9 . 8 2
8 $\rightarrow$ 0.8

The places do not mirror each other around the point — there is no "oneths". Going right they are tenths, hundredths, thousandths: each one ten times SMALLER than the last.

Count in from the point: the 8 sits in the tenths.

Its VALUE is what it is worth there, not the digit itself: 8 in the tenths is 0.8. That gap between "8" and "0.8" is the whole of this topic.

Comparing Decimals

Compare decimals

1. $6.3 \square 7.2$

6.3 ? 7.2
63 tenths < 72 tenths
6.3 < 7.2

Both have 1 figure after the point already, so they are counting the same sized pieces.

Now they are both tenths: 63 against 72. 72 is more. So $6.3 < 7.2$.

Solutions (12 of 20)

Comparing Decimals (continued)

Compare decimals (continued)

2. 3.12 5.71

3.12 ? 5.71
312 hundredths <
571 hundredths
3.12 < 5.71

Both have 2 figures after the point already, so they are counting the same sized pieces.

Now they are both hundredths: 312 against 571. 571 is more. So $3.12 < 5.71$.

Types of Angle

Acute, right, or obtuse

1.



acute

right

obtuse

120° vs 90°
 $120 > 90$
 $120^\circ \rightarrow$ obtuse

Do not judge it by how big it looks — a long pair of arms makes an angle look wider than it is, and the arms are not the angle. Compare it to a RIGHT ANGLE instead; that is the one you can picture exactly.

120 is more than 90.

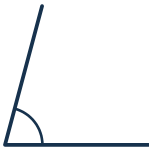
Bigger than a right angle is OBTUSE. (It cannot fit inside the corner of a page — but it is still less than a straight line, which would be 180.)

Solutions (13 of 20)

Types of Angle (continued)

Acute, right, or obtuse (continued)

2.



acute

right

obtuse

75° vs 90°
 $75 < 90$
 $75^\circ \rightarrow$ **acute**

Do not judge it by how big it looks — a long pair of arms makes an angle look wider than it is, and the arms are not the angle. Compare it to a RIGHT ANGLE instead; that is the one you can picture exactly.

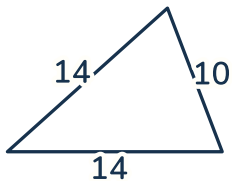
75 is less than 90.

Smaller than a right angle is ACUTE. (A useful check: it fits inside the corner of a page.)

Types of Triangle

Classify triangles by angles or sides

1.



equilateral

isosceles

scalene

sides: 10 cm 14 cm
14 cm
isosceles

Every triangle has TWO names — one for its angles and one for its sides — and it has both at once. This question is asking for the SIDE name, so look only at the side lengths.

Count how many are the SAME, not how long they are: two match and one does not.

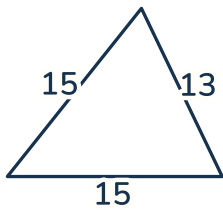
Exactly two equal is ISOSCELES. (Equilateral counts as isosceles too, but when all three match the question wants the more exact name.)

Solutions (14 of 20)

Types of Triangle (continued)

Classify triangles by angles or sides (continued)

2.



equilateral

isosceles

scalene

sides: 13 cm 15 cm
15 cm

isosceles

Every triangle has TWO names — one for its angles and one for its sides — and it has both at once. This question is asking for the SIDE name, so look only at the side lengths.

Count how many are the SAME, not how long they are: two match and one does not.

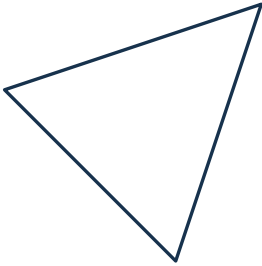
Exactly two equal is ISOSCELES. (Equilateral counts as isosceles too, but when all three match the question wants the more exact name.)

Solutions (15 of 20)

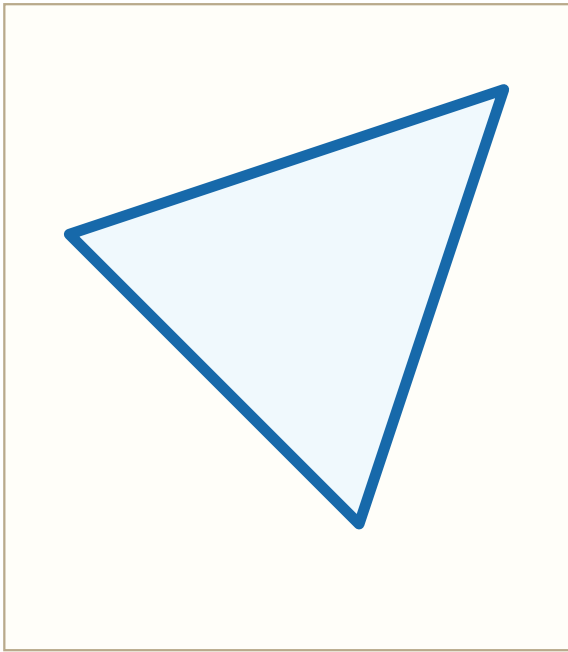
Lines of Symmetry

Lines of symmetry

1.



— lines



A line of symmetry is a FOLD: crease along it and the two halves must land exactly on each other. Not "looks balanced" — land on each other.

Here is one of them. Crease along that line and the part on the left lands exactly on the part on the right — that is what makes it count.

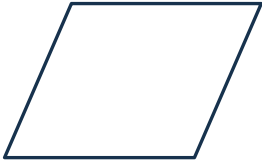
And that is the only one: an isosceles triangle has 1 line of symmetry.

Solutions (16 of 20)

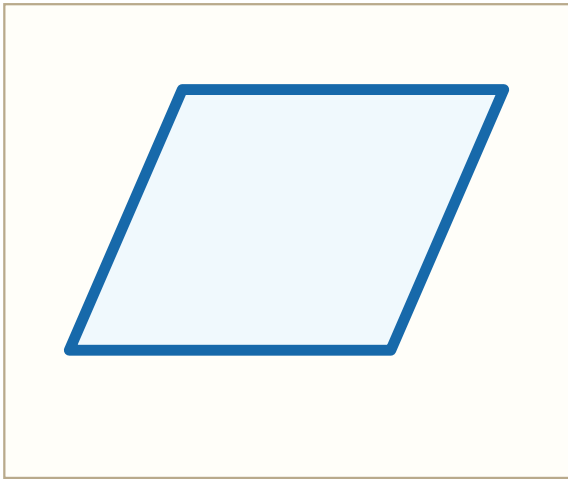
Lines of Symmetry (continued)

Lines of symmetry (continued)

2.



— lines



A line of symmetry is a FOLD: crease along it and the two halves must land exactly on each other. Not "looks balanced" — land on each other.

A parallelogram is the one that catches everybody. It looks symmetrical, and it is — but the symmetry it has is a TURN, not a fold: spin it half a turn and it fits itself. Try to fold it along either diagonal and the halves miss.

So a parallelogram has 0 lines of symmetry.

Number Patterns

Number patterns

1. 8, 18, 28, —, 48

8 18 28 **38** **48**

Find the rule first, from two numbers you can actually see — never from the gap.

8 to 18 is $+ 10$. One pair is a guess, though — check it against another.

$18 + 10 = 28$, so the rule holds. Two pairs agreeing is what turns a guess into the rule.

Now apply it to the gap: $28 + 10 = 38$.

Check it against the number already after the gap: $38 + 10 = 48$, which is what is there. The missing number is 38.

Solutions (17 of 20)

Number Patterns (continued)

Number patterns (continued)

2. 1, —, 17, 25, 33

1 9 17 25 33

Find the rule first, from two numbers you can actually see — never from the gap.

17 to 25 is + 8. One pair is a guess, though — check it against another.

$25 + 8 = 33$, so the rule holds. Two pairs agreeing is what turns a guess into the rule.

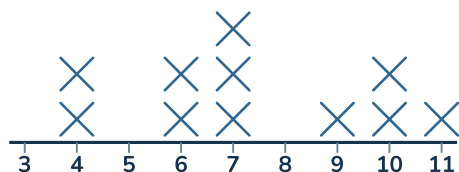
Now apply it to the gap: $1 + 8 = 9$.

Check it against the number already after the gap: $9 + 8 = 17$, which is what is there. The missing number is 9.

Line Plots and Bar Graphs

Line plots

1. Length of our pencils (inches)



How many more pencils measured 7 inches than 4 inches?

—

4 inches: 2 pencils
6 inches: 2 pencils
7 inches: 3 pencils
9 inches: 1 pencils
10 inches: 2 pencils
11 inches: 1 pencils

1

A line plot is not bars to read off a scale — each mark is one pencil. So the number **ALONG** the bottom and the number of marks **ABOVE** it are two different quantities, and the question wants one of them.

Counting the stacks: 2 at 4, 2 at 6, 3 at 7, 1 at 9, 2 at 10, 1 at 11.

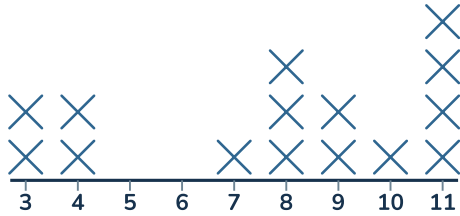
3 at 7 inches, 2 at 4 inches: $3 - 2 = 1$ — so the answer is 1.

Solutions (18 of 20)

Line Plots and Bar Graphs (continued)

Line plots (continued)

2. Height of the bean plants (inches)



How many plants were measured altogether?

—

3 inches: 2 plants

4 inches: 2 plants

7 inches: 1 plants

8 inches: 3 plants

9 inches: 2 plants

10 inches: 1 plants

11 inches: 4 plants

15

A line plot is not bars to read off a scale — each mark is one plant. So the number **ALONG** the bottom and the number of marks **ABOVE** it are two different quantities, and the question wants one of them.

Counting the stacks: 2 at 3, 2 at 4, 1 at 7, 3 at 8, 2 at 9, 1 at 10, 4 at 11.

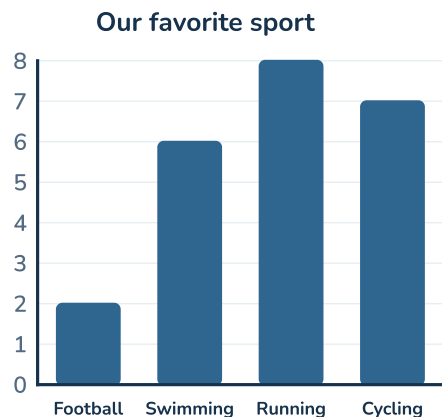
$2 + 2 + 1 + 3 + 2 + 1 + 4 = 15$ — so the answer is 15.

Solutions (19 of 20)

Line Plots and Bar Graphs (continued)

Bar graphs

4.



How many more chose running than chose football?

—

Football: 2 up → 2 votes
Swimming: 6 up → 6 votes
Running: 8 up → 8 votes
Cycling: 7 up → 7 votes

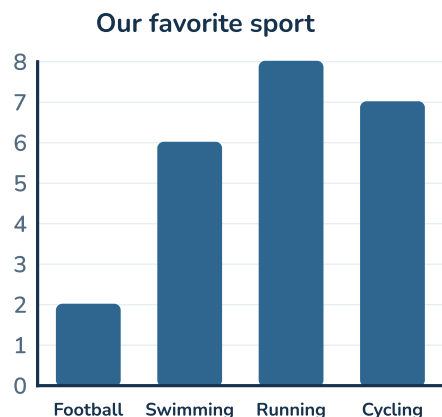
6 votes

Check the key first, every time. Here one square is one vote, so counting is enough — but that is a fact to check, not to assume.

So the counts read straight off: Football 2, Swimming 6, Running 8, Cycling 7.

Now the question, on the NUMBERS rather than the marks: Running is $8 - 2 = 6$ more than Football. So the answer is 6 votes.

5.



How many fewer chose swimming than chose running?

—

Football: 2 up → 2 votes
Swimming: 6 up → 6 votes
Running: 8 up → 8 votes
Cycling: 7 up → 7 votes

2 votes

Check the key first, every time. Here one square is one vote, so counting is enough — but that is a fact to check, not to assume.

So the counts read straight off: Football 2, Swimming 6, Running 8, Cycling 7.

Now the question, on the NUMBERS rather than the marks: Swimming is $8 - 6 = 2$ fewer than Running. So the answer is 2 votes.

Solutions (20 of 20)

Spot the Mistake

Spot the error

1. Theo wrote $53 - 20 = 23$. Write the correct answer. ____

Why?

$$53 - 20 = 33$$

they wrote: 23

Do not check by reading their working. Somebody else's answer is the most persuasive thing on the page, and rereading it is how you end up agreeing with it — work the sum yourself first, then compare.

On your own: $53 - 20 = 33$.

Now compare. They wrote 23, and it should be 33 — out by 10. The correct answer is 33.

2. Noor wrote $3 \times 3 = 6$. Write the correct answer. ____

Why?

$$3 \times 3 = 9$$

they wrote: 6

Do not check by reading their working. Somebody else's answer is the most persuasive thing on the page, and rereading it is how you end up agreeing with it — work the sum yourself first, then compare.

On your own: $3 \times 3 = 9$.

Now compare. They wrote 6, and it should be 9 — out by 3. The correct answer is 9.