

PRACTICE WORKSHEET + FULL ANSWER KEY

Fractions, decimals and proportion

Upper primary and early secondary. Work through the sections in order, or choose the one that matches this week's topic.

QUESTIONS	SECTIONS	ANSWER KEY	WORKING SPACE
104	10	At the back	Ruled

Name _____ Class _____ Date _____

Before you start

A fraction describes equal parts of a whole. Keep the whole consistent, use equivalent fractions to compare values, and connect ratios to a unit amount.

WORKED EXAMPLE

A jacket costs \$80 before a 25% discount. What is the sale price?

- 1 25% is one quarter.
- 2 One quarter of \$80 is \$20.
- 3 $\$80 - \$20 = \$60$.

Use this method as your model. Set out your own working the same way.

Common mistakes to avoid

- Adding denominators when adding fractions
- Reporting the discount instead of the sale price

There are 104 questions across 10 sections. Write in the ruled space, then mark your work against the answer key at the back. Topics covered: Equivalent fractions, Percentages, Ratio reasoning.

SECTION A Naming and equivalence

Keep the whole the same. Simplify only by dividing the top and the bottom by the same number.

1

Simplify 12/18.

2

Simplify 45/60.

3

Write a fraction equivalent to $\frac{2}{5}$ with a denominator of 20.

4

Which is larger, $\frac{3}{5}$ or $\frac{5}{8}$? Show how you compared them.

5

Write $\frac{7}{4}$ as a mixed number.

6

Write $2\frac{3}{5}$ as an improper fraction.

7

Order from smallest to largest: $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{8}$.

8

Place $\frac{3}{4}$ on a number line from 0 to 1. Describe your marks.

9

What fraction of an hour is 20 minutes?

10

Shade $\frac{5}{6}$ of a shape split into 6 equal parts. How much is unshaded?

11

Are $\frac{6}{9}$ and $\frac{10}{15}$ equivalent? Explain.

SECTION B Calculating with fractions*Use a common denominator to add or subtract. Multiply the numerators and the denominators to multiply.*

12

Calculate $\frac{1}{4} + \frac{3}{8}$.

13

Calculate $\frac{2}{3} + \frac{1}{6}$.

14

Calculate $\frac{5}{6} - \frac{1}{3}$.

15

Calculate $\frac{3}{4} - \frac{2}{5}$.

16

Calculate $\frac{1}{2} \times \frac{3}{5}$.

17

Calculate $\frac{2}{3} \times 9$.

18

Calculate $\frac{3}{4} \div 2$.

19

Calculate $\frac{1}{2} \div \frac{1}{4}$.

20

Calculate $1\frac{1}{2} + 2\frac{3}{4}$.

21

Find $\frac{2}{5}$ of 45.

22

Find $\frac{3}{8}$ of 64.

SECTION C Decimals and percentages

Line up the decimal points. A percentage is simply a fraction out of 100.

23 Write 0.35 as a percentage.

24 Write 0.35 as a fraction in its simplest form.

25 Write $\frac{3}{8}$ as a decimal.

26 Write 45% as a fraction in its simplest form.

27 Find 15% of 200.

28 Find 12% of 350.

29 Calculate $0.6 + 0.45$.

30 Calculate $2.5 - 0.78$.

31 Calculate 0.4×0.3 .

32 Round 3.847 to 2 decimal places.

33 Order from smallest to largest: 0.7, 0.07, 0.77.

SECTION D Ratio and proportion

A ratio compares parts of a whole. Find the value of one part first.

34 Split \$40 in the ratio 3:5.

35 Split 72 cm in the ratio 1:2:3.

36 A recipe needs 2 cups of flour for 8 cakes. How much is needed for 12 cakes?

37 Simplify the ratio 18:24.

38 5 pens cost \$6.50. Find the cost of 8 pens.

39 A map scale is 1:50,000. What ground distance does 4 cm represent?

40 A car travels 180 km in 2 hours. Find the average speed.

41 Paint is mixed white to blue in the ratio 4:1. How much blue is in 20 L?

42

In a class of 30 the ratio of girls to boys is 2:3. How many boys are there?

43

A photo 6 cm by 4 cm is enlarged so the longer side becomes 15 cm. Find the shorter side.

44

Is 3:4 the same ratio as 9:16? Explain.

SECTION E Reasoning and word problems

Reread the question before you write the final sentence, and include the units.

45

A jacket costs \$80 before a 25% discount. Find the sale price.

46

A \$45 item rises in price by 20%. Find the new price.

47

A price falls from \$50 to \$40. Find the percentage decrease.

48

A test score is 18 out of 24. Write this as a percentage.

49

Three fifths of a class of 25 walk to school. How many walk?

50

A tank is $\frac{3}{4}$ full and holds 60 L when full. How many litres are in it?

51

Explain why you cannot add $\frac{1}{3}$ and $\frac{1}{4}$ by adding the denominators.

52

A shop takes 10% off, then 10% off the new price. Is that the same as 20% off? Explain.

53

A bag holds 12 red and 8 blue counters. What percentage are blue?

54

Write a word problem that uses $\frac{3}{4}$ of 24, then answer it.

SECTION F Negative numbers and order of operations

Use a number line for negatives. Brackets, then $\times$ and $\div$, then $+$ and $-$.

55 Calculate $-5 + 8$.

56 Calculate $3 - 9$.

57 Calculate $-4 - 6$.

58 Calculate -3×4 .

59 Calculate $-20 \div -5$.

60 Order from smallest to largest: $-3, 2, -7, 0$.

61 The temperature is -2°C and rises by 7°C . Find the new temperature.

62 Calculate $4 + 3 \times 5$.

63 Calculate $(4 + 3) \times 5$.

64 Calculate $20 - 12 \div 4$.

SECTION G Percentage change

Decide first whether you need the change itself or the final amount.

65 Increase 60 by 25%.

66 Decrease 90 by 30%.

67 Find 8% of 250.

68 A \$250 bike is reduced by 40%. Find the sale price.

69 A wage of \$600 rises by 5%. Find the new wage.

70

A price rises from \$80 to \$100. Find the percentage increase.

71

A population falls from 4,000 to 3,600. Find the percentage decrease.

72

Write 0.08 as a percentage.

73

A jacket costs \$60 after a 20% discount. Find the original price.

74

Explain why a 10% rise followed by a 10% fall does not return the original amount.

SECTION H Rates, speed and unit pricing

Find the value of one unit first, then scale up to what the question asks.

75

A car travels 240 km in 3 hours. Find the average speed.

76

A cyclist rides at 15 km/h for 2 hours. Find the distance.

77

A train travels 180 km at 60 km/h. Find the time taken.

78

6 apples cost \$4.80. Find the cost of one apple.

79

Which is better value: 500 g for \$3 or 800 g for \$4.40?

80

A tap fills 24 L in 4 minutes. Find the rate in litres per minute.

81

A printer prints 18 pages in 2 minutes. How many pages in 7 minutes?

82

A recipe for 4 people uses 320 g of rice. How much is needed for 7 people?

83

Convert 90 km/h to metres per second.

84

A worker earns \$76 for 8 hours. Find the hourly rate.

SECTION I Measurement and shape

Check the units before you calculate, and give the units in your answer.

85 Find the perimeter of a rectangle 5.5 cm by 3 cm.

86 Find the area of a rectangle 5.5 cm by 3 cm.

87 Find the area of a triangle with base 9 cm and height 6 cm.

88 Find $\frac{3}{4}$ of 1 metre in centimetres.

89 A tank holds $2\frac{1}{2}$ litres. Write this in millilitres.

90 Convert 1.75 kg to grams.

91 A square has area 36 cm^2 . Find its side length.

92 Find the volume of a cuboid 4 cm by 3 cm by 2 cm.

93 Half of a 2.4 m plank is used. How much is left, in centimetres?

94 A circle has radius 7 cm. Find its circumference in terms of π .

SECTION J Mixed review and challenge

Some of these need two steps. Write down what you find first.

95 Calculate $\frac{2}{3}$ of $\frac{3}{5}$.

96 Calculate $1\frac{3}{4} - \frac{5}{8}$.

97 Order from smallest to largest: 0.6, $\frac{5}{8}$, 62%.

98 A class of 32 is $\frac{3}{8}$ boys. How many girls are there?

99 Three friends share \$45 in the ratio 2:3:4. How much does each get?

100

A drink is 1 part cordial to 5 parts water. How much cordial is in 900 mL?

101

A shop offers 3 for the price of 2 on \$6 items. Find the cost per item when you buy 3.

102

Write $\frac{7}{20}$ as a decimal and as a percentage.

103

Explain why 0.5×0.5 is smaller than 0.5.

104

A journey of 150 km is $\frac{3}{5}$ complete. How far is left?

Answer key

Work each section before you check it. These are model answers: an equivalent method, or a different well-supported interpretation, can be just as correct.

SECTION A - NAMING AND EQUIVALENCE

1. $\frac{2}{3}$; divide both by 6.
2. $\frac{3}{4}$; divide both by 15.
3. $\frac{8}{20}$.
4. $\frac{5}{8}$. Written in fortieths, $\frac{3}{5} = \frac{24}{40}$ and $\frac{5}{8} = \frac{25}{40}$.
5. $1\frac{3}{4}$.
6. $\frac{13}{5}$.
7. $\frac{3}{8}$, $\frac{1}{2}$, $\frac{2}{3}$.
8. Divide the line into 4 equal parts; $\frac{3}{4}$ is the third mark from 0.
9. $\frac{1}{3}$, because $\frac{20}{60}$ simplifies to $\frac{1}{3}$.
10. $\frac{1}{6}$ is unshaded.
11. Yes; both simplify to $\frac{2}{3}$.

SECTION B - CALCULATING WITH FRACTIONS

12. $\frac{5}{8}$, because $\frac{1}{4} = \frac{2}{8}$.
13. $\frac{5}{6}$.
14. $\frac{1}{2}$.
15. $\frac{7}{20}$.
16. $\frac{3}{10}$.
17. 6.
18. $\frac{3}{8}$.
19. 2, because one half contains two quarters.
20. $4\frac{1}{4}$.
21. 18.
22. 24.

SECTION C - DECIMALS AND PERCENTAGES

23. 35%.
24. $\frac{7}{20}$.
25. 0.375.
26. $\frac{9}{20}$.
27. 30.
28. 42.
29. 1.05.
30. 1.72.
31. 0.12.
32. 3.85.
33. 0.07, 0.7, 0.77.

SECTION D - RATIO AND PROPORTION

34. \$15 and \$25; each of the 8 parts is worth \$5.
35. 12 cm, 24 cm and 36 cm.

36. 3 cups: $\frac{12}{8} \times 2 = 3$.
37. 3:4.
38. \$10.40, because one pen costs \$1.30.
39. 200,000 cm, which is 2 km.
40. 90 km/h.
41. 4 L of blue.
42. 18 boys.
43. 10 cm; the scale factor is 2.5.
44. No. 3:4 is equivalent to 9:12, not 9:16.

SECTION E - REASONING AND WORD PROBLEMS

45. \$60; the discount is \$20.
46. \$54.
47. 20%, because the \$10 fall is $\frac{10}{50}$ of the original.
48. 75%.
49. 15 students.
50. 45 L.
51. The parts are different sizes, so both must be rewritten with a common denominator; $\frac{1}{3} + \frac{1}{4} = \frac{7}{12}$.
52. No. Two 10% reductions leave 81% of the original price, not 80%.
53. 40%.
54. Any sensible context; $\frac{3}{4}$ of 24 = 18.

SECTION F - NEGATIVE NUMBERS AND ORDER OF OPERATIONS

55. 3.
56. -6.
57. -10.
58. -12.
59. 4.
60. -7, -3, 0, 2.
61. 5 °C.
62. 19, because multiplication comes before addition.
63. 35.
64. 17.

SECTION G - PERCENTAGE CHANGE

65. 75.
66. 63.
67. 20.
68. \$150.
69. \$630.
70. 25%.

- 71. 10%.
- 72. 8%.
- 73. \$75, because \$60 is 80% of the original.
- 74. The fall is taken from a larger amount, so the result is 99% of the original.

SECTION H - RATES, SPEED AND UNIT PRICING

- 75. 80 km/h.
- 76. 30 km.
- 77. 3 hours.
- 78. \$0.80.
- 79. 800 g for \$4.40, at \$5.50 per kg against \$6.00 per kg.
- 80. 6 L/min.
- 81. 63 pages.
- 82. 560 g.
- 83. 25 m/s.
- 84. \$9.50 per hour.

SECTION I - MEASUREMENT AND SHAPE

- 85. 17 cm.
- 86. 16.5 cm².
- 87. 27 cm².
- 88. 75 cm.
- 89. 2,500 mL.
- 90. 1,750 g.
- 91. 6 cm.
- 92. 24 cm³.
- 93. 120 cm.
- 94. 14 π cm.

SECTION J - MIXED REVIEW AND CHALLENGE

- 95. 2/5.
- 96. 1 1/8.
- 97. 0.6, 62%, 5/8.
- 98. 20 girls.
- 99. \$10, \$15 and \$20.
- 100. 150 mL.
- 101. \$4 per item.
- 102. 0.35 and 35%.
- 103. Multiplying by a number less than 1 takes a fraction of the amount, so the result is smaller.
- 104. 60 km.

Review and next steps

Mark your work against the answer key, record your score for each section, then answer the three questions below. Bring this page to your next lesson so your tutor can start from what actually blocked you.

Which question did you find hardest, and what exactly stopped you?

Rewrite the corrected working for that question here.

Which section do you want to practise again before your next lesson?

Score record

SECTION	QUESTIONS	NUMBER CORRECT	PRACTISE AGAIN?
A. Naming and equivalence	11		
B. Calculating with fractions	11		
C. Decimals and percentages	11		
D. Ratio and proportion	11		
E. Reasoning and word problems	10		
F. Negative numbers and order of operations	10		
G. Percentage change	10		
H. Rates, speed and unit pricing	10		
I. Measurement and shape	10		
J. Mixed review and challenge	10		
Total	104		

Keep going with one-to-one support.

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