

Number applications practice

Skill 4.1 Sharing quantities in a given ratio

Work out how much each person will receive for the first 5 weeks of Bull Lotto if the prize is worth \$36 000 each week:

Week 1

Sue, Jim and Bill in the ratio 1:2:3

Week 2

Jack and Jill in the ratio 1:2

Week 3

Jenny, Jane and Robert in the ratio 7:2:3

Week 4

Frank, Freda and Fiona in the ratio 1:5:3

Week 5

Zoe, Prue, Vladimir and Joe in the ratio 2:1:3:2

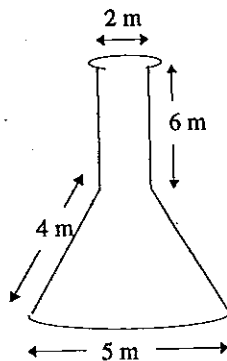
Skill 4.2 Using ratios within a population

- Red, blue and white counters are placed in a bag in the ratio 1:2:7. If there are 364 white counters in the bag then:
 - how many red counters are there?
 - how many blue counters are there?
 - how many counters in total are in the bag?
- 5¢, 10¢, 20¢, 50¢ and \$1 coins are put in my money box in the ratio 1:2:3:4:5. If there are thirty-nine 20¢ coins in the box, how many:
 - 5¢ coins
 - 10¢ coins
 - 50¢ coins
 - \$1 coins
 are there in the box
 - What are my total savings in the money box?

Skill 4.3 Ratios and scale diagrams

Here is a diagram of the famous "big flask".

Redraw the beaker and mark it to show the dimensions of a scale drawing of it at a scale of 50:1, in centimetres.



Skill 4.4 Finding fractions of quantities

Find:

- | | |
|-----------------------------|-----------------------------|
| 1 $\frac{2}{3}$ of \$63 | 2 $\frac{1}{2}$ of \$24 |
| 3 $\frac{1}{8}$ of \$201.60 | 4 $\frac{3}{5}$ of \$65 |
| 5 $\frac{3}{5}$ of \$60.25 | 6 $\frac{1}{9}$ of \$74.07 |
| 7 $\frac{1}{6}$ of \$69.42 | 8 $\frac{5}{12}$ of \$12.24 |
| 9 $\frac{1}{6}$ of \$30.72 | 10 $\frac{2}{7}$ of \$7.84 |

Skill 4.5 Converting percentages into fractions

Convert the following into fractions:

- | | | | |
|---------|---------|---------|---------|
| 1 18% | 2 36% | 3 48% | 4 25% |
| 5 35% | 6 85% | 7 92% | 8 102% |
| 9 200% | 10 205% | 11 180% | 12 150% |
| 13 45% | 14 63% | 15 261% | 16 38% |
| 17 380% | 18 500% | 19 625% | 20 850% |

Skill 4.6 Converting fractions into percentages

Convert these into percentages:

- | | | | |
|-----------------|------------------|-----------------|-----------------|
| 1 $\frac{1}{5}$ | 2 $\frac{3}{4}$ | 3 $\frac{2}{3}$ | 4 $\frac{1}{7}$ |
| 5 $\frac{3}{8}$ | 6 $\frac{1}{8}$ | 7 $\frac{2}{9}$ | 8 $\frac{4}{7}$ |
| 9 $\frac{3}{5}$ | 10 $\frac{1}{6}$ | | |

Skill 4.7 Expressing fractions of quantities as percentages

- Convert the following test scores into percentages:

- | | | |
|-----------------------------|-------------------------|---------------------------|
| (a) Bill $\frac{5}{40}$ | (b) Sue $\frac{7}{50}$ | (c) Sam $\frac{26}{50}$ |
| (d) Fiona $\frac{19}{20}$ | (e) Kim $\frac{15}{18}$ | (f) Jenny $\frac{13}{13}$ |
| (g) William $\frac{17}{20}$ | (h) Ian $\frac{4}{16}$ | |

- If 250 mL of milk is poured into a 2 litre jug, then what percentage of the jug is
 - full
 - empty

Skill 4.8 Finding percentages of quantities

Find:

- | | |
|---------------|-----------------|
| 1 20% of \$38 | 2 12% of \$14 |
| 3 16% of \$21 | 4 3% of \$15 |
| 5 8% of \$8 | 6 2% of \$16 |
| 7 3% of \$16 | 8 38% of \$50 |
| 9 6% of \$13 | 10 2% of \$1.50 |

Skill 4.9 Scientific notation

Write the following using scientific notation:

- | | |
|-----------------|----------------|
| 1 3 800 000 | 2 586 000 |
| 3 50 000 000 | 4 9 800 000 |
| 5 8 100 000 | 6 201 000 000 |
| 7 0.000 002 | 8 0.000 008 |
| 9 0.000 012 | 10 0.000 008 2 |
| 11 0.000 000 04 | 12 0.000 038 6 |

Skill 4.10 Mental calculations

Evaluate the following without writing down any workings:

- | | |
|----------------------------------|----------------------------------|
| 1 36×25 | 2 16×25 |
| 3 75×8 | 4 125×4 |
| 5 $2000 \div 20$ | 6 $1800 \div 60$ |
| 7 $\frac{3}{4}$ of 80 | 8 $\frac{1}{5}$ of 25 |
| 9 $\frac{4}{5}$ of 25 | 10 $\frac{1}{4}$ of 16 |
| 11 $2\frac{1}{2} + 1\frac{1}{4}$ | 12 $2\frac{1}{4} + 2\frac{1}{2}$ |
| 13 $2\frac{1}{3} + 1\frac{2}{3}$ | 14 $4\frac{1}{5} + 2\frac{2}{5}$ |
| 15 $6\frac{1}{4} + 2\frac{1}{2}$ | 16 $5\frac{1}{3} + 2\frac{1}{3}$ |
| 17 $2\frac{1}{4} + 3\frac{3}{4}$ | 18 $2\frac{3}{4} - \frac{1}{2}$ |
| 19 $8 - 1\frac{1}{5}$ | 20 $12 - 6\frac{1}{4}$ |

Skill 4.11 Estimation

Work out a close estimation for the following:

- | | |
|---------------------------------------|--|
| 1 2.04×3.89 | 2 $6.02 \times 3.9 \times 1.04$ |
| 3 $6.1 + 8.2 + 8.99$ | 4 $832.99 - 68.04$ |
| 5 $2\frac{1}{4} + 3\frac{3}{4}$ | 6 $6\frac{1}{4} \times 8\frac{1}{9}$ |
| 7 $9\frac{1}{4} \times 10\frac{1}{4}$ | 8 $5\frac{2}{3} \times 1\frac{1}{4} \times 2\frac{2}{3}$ |
| 9 $16\frac{2}{3} - 1\frac{1}{4}$ | 10 $8\frac{4}{5} - 6\frac{1}{3}$ |

Answers

4 Number applications

Skill 4.1

Week 1

Sue \$6000, Jim \$12 000, Bill \$18 000

Week 2

Jack \$12 000, Jill \$24 000

Week 3

Jenny \$21 000, James \$6000, Robert \$9000

Week 4

Frank \$4000, Freda \$20 000, Fiona \$12 000

Week 5

Zoe \$9000, Prue \$4500, Vladimir \$13 500, Joe \$9000

Skill 4.2

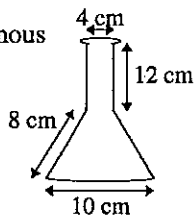
1 (a) 52 (b) 104 (c) 520

2 (a) 13 (b) 26 (c) 52 (d) 65

(e) \$102.05

Skill 4.3

Plan of the famous
"big flask"



Skill 4.4

1 \$42

2 \$12

3 \$25.20

4 \$39

5 \$36.15

6 \$8.23

7 \$11.57

8 \$5.10

9 \$5.12

10 \$2.24

Skill 4.5

1 $\frac{9}{50}$ 2 $\frac{9}{25}$ 3 $\frac{12}{25}$ 4 $\frac{1}{4}$ 5 $\frac{7}{20}$

6 $\frac{17}{20}$ 7 $\frac{23}{25}$ 8 $1\frac{1}{50}$ 9 2 10 $2\frac{1}{20}$

11 $1\frac{4}{5}$ 12 $1\frac{1}{2}$ 13 $\frac{9}{20}$ 14 $\frac{63}{100}$ 15 $2\frac{61}{100}$

16 $\frac{19}{50}$ 17 $3\frac{4}{5}$ 18 5 19 $6\frac{1}{4}$ 20 $8\frac{1}{2}$

Skill 4.6

1 20% 2 75% 3 $66\frac{2}{3}\%$ 4 $14\frac{2}{7}\%$ 5 $37\frac{1}{2}\%$

6 $12\frac{1}{2}\%$ 7 $22\frac{2}{9}\%$ 8 $57\frac{1}{7}\%$ 9 60% 10 $16\frac{2}{3}\%$

Skill 4.7

1 (a) 12.5% (b) 14% (c) 52% (d) 95%

(e) $83\frac{1}{3}\%$ (f) 100% (g) 85% (h) 25%

2 (a) 12.5% (b) 87.5%

Skill 4.8

1 \$7.60

2 \$1.68

3 3.36%

4 \$0.45

5 \$0.64

6 \$0.32

7 \$0.48

8 \$19

9 \$0.78

10 \$0.03

Skill 4.9

1 3.8×10^6

2 5.86×10^8

3 5×10^7

4 9.8×10^6

5 8.1×10^6

6 2.01×10^8

7 2×10^{-6}

8 8×10^{-6}

9 1.2×10^{-5}

10 8.2×10^{-6}

11 4×10^{-8}

12 3.86×10^{-5}

Skill 4.10

1 900

2 400

3 600

4 500

5 100

6 30

7 60

8 5

9 20

10 4

11 $3\frac{3}{4}$

12 $4\frac{3}{4}$

13 4

14 $6\frac{3}{5}$

15 $8\frac{3}{4}$

16 $7\frac{2}{3}$

17 6

18 $2\frac{1}{4}$

19 $6\frac{4}{5}$

20 $5\frac{3}{4}$

Skill 4.11

1 8

2 24

3 23

4 765

5 6

6 48

7 90

8 18

9 16

10 3