Leckie & Leckie Secondary Maths Dictionary
Teachers' Resources

Answers to Problems in the Dictionary

Answers to the problems in the Leckie & Leckie Secondary Maths Dictionary

add
$16 + 42 = 58$

algebraic expression
simplified expression $= 2d + 7 - 3d + 4 = 3 - d$

'and' rule
P(3 and 4) $= \frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$

arithmetic sequence
1, 3, 5, 7, 9, 11...

ascending
0.526, 0.53, 0.54, 0.555

at
10 pens @ 30p each = 300p = £3

average speed
$\frac{150}{2}$ = 75 kph

breadth
$\frac{64}{16}$ = 4 cm

buy
£1 ÷ 6 = $\frac{100}{6}$ = 16.67
$\therefore$ 16 oranges can be bought for £1

calculate
3rd angle = $180^0 - (40^0 + 40^0) = 100^0$

cancel
$\frac{26}{52} = \frac{1}{2}$, $\frac{22}{28} = \frac{11}{14}$, $\frac{45}{60} = \frac{3}{4}$

charge
12 people cost $12 \times$ £3.50 = £42

choose
2, 13, 23 are primes

common factor
3 is the common factor of 15, 39, 45

common multiples
12, 24, 36... are common multiples of 2, 4, 6

compound interest
1st year's interest = 6% of £500 = £30
2nd year's interest = 6% of £530 = £31.80
3rd year's interest = 6% of £561.80 = £33.71
total compound interest = £95.51

convert
number of dollars = 10×1.40 = $14

create
$4x - 5 = 23$
$(x = 7)$

credit
interest = 5% of £500 = £25

density
$10 \div (10 \times 15 \times 20) = 1/300$ kg/cm^3

descending
0.555, 0.54, 0.53, 0.526

difference
1st discount = £10; 2nd discount, 20% of £45 = £9; difference = £1

direct proportion
earnings = $\frac{8}{5} \times$ £27.50 = £44

discount
original price = $50 \times \frac{100}{75}$ = £66.67

divide
$64 \div 16 = 4$

earn
$30 \times$ £6.50 = £195

eliminate
$\frac{12}{16} = \frac{3}{4}$ (common factor = 4)

equation
$5x = 25 \therefore x = 5$

evaluate
VAT = £(0.175×22.50) = £3.94

exchange rate
number of dollars = 150×1.40 = $210

expand
$3x(x - 1) - 2(4 + x) = 3x^2 - 3x - 8 - 2x$
$= 3x^2 - 5x - 8$

expand the product
$(x + 2)(x - 3) = x^2 - x - 6$

explore
HHH, HHT, HTT, HTH, THH, THT, TTH, TTT

express
$0.000785 = 7.85 \times 10^{-4}$

extract
multiples of 3 = 27, 57

generate
sequence is 3, 8, 13, 18...

greater
$\frac{3}{4} = 0.75$, $\frac{5}{6} = 0.83\dot{3} \therefore \frac{5}{6} > \frac{3}{4}$

greatest value
largest number = 4321

highest common factor
HCF of 15 and 60 = 15

hire
cost of car = 4×33 = £132

hire purchase
instalments = (£500 − £50) $\times \frac{10\%}{10}$
$= \frac{450}{100}$ = £4.50

identify
square numbers = 25, 36, 49 (5^2, 6^2, 7^2)

integer
−3, −2, −1, 0 1, 2 satisfy the inequality $-3 \le a < 3$

item
mean = $\frac{\text{total sum of items}}{\text{number of items}}$

kilogram
2500 g = 2.5 kg

Answers to the problems in the Leckie & Leckie Secondary Maths Dictionary (continued)

kilolitre
3450 l = 3.45 kl

least
17 + 8 (least difference) = 25 (= 5^2)

less than
$\frac{2}{3} = 0.67$, $\frac{5}{6} = 0.83$ $\therefore \frac{2}{3} < \frac{5}{6}$

like terms
$4a^2 + a - 3b$

loss
cost price = £60, selling price
$= 150 \times \frac{35}{100} = \frac{105}{2}$ = £52.50 $\therefore$ loss made

lowest terms
$\frac{48}{160} = \frac{3}{10}$

median
11, 13, 13.5, 14, 15, 16.5, 17 $\therefore$ 14 is median

miles per hour
average speed = $\frac{35 \text{ miles}}{30 \text{ minutes}} = \frac{35}{0.5}$ = 70 mph

minus
12 − 4 = 8

mode
mode = 4

multiply
$6 \times 4 = 24$

multiply out
$5(y + 2) = 48$
$5y + 10 = 48$
$5y = 38$
$y = 7.6$

near
159 ≈ 200 to nearest 100

net
Maya's net income = £10 250 − £3000 = £1250

pack
P(ace) = $\frac{4}{52} = \frac{1}{13}$

pay
Marie earns 30 × £5.50 = £165

percentage
kings, queens and jacks form $\frac{12}{52} \times 100$
$= 23\frac{1}{13}$% of pack

perimeter
perimeter of rectangle = 2(15 + 7) = 2 × 22
= 44 cm

plot
points form a triangle

price
sale price = 80% of £559 = £447.20

prime factor
prime factors of 28 = $2^2 \times 7$

probability
probability of throwing a dice and getting a 6 = $\frac{1}{6}$

procedure
to reduce fractions, cancel numerator and denominator by HCF

quadrangle
perimeter = 2(20 + 16) = 2 × 36 = 72 m

quadratic sequence
next number is $6^2 + 2 = 38$

quantity
sugar for 2 people = $\frac{2}{4} \times 60 = 30$ g

quotient
248 ÷ 4 = 62 which is the quotient

range
range = 75% − 22% = 53%

ratio
total no. of parts = 3 + 2 + 5 = 10, 1 part
= 150 ÷ 10 = 15, lemonade:orangeade:cola
= (3 × 15):(2 × 15):(5 × 15) = 45:30:75

rectangle
area of rectangle = 8.4 × 4.8 = 40.32 cm^2

reduce
$\frac{24}{36}$ is reduced to $\frac{2}{3}$ by cancelling
by HCF of 12

replace
$\frac{1}{2}bh = \frac{1}{2} \times 7 \times 4.8 = 16.8$

rough
$299 \times 41 \approx 300 \times 40 = 12\,000$

round
(1) 18; (2) 17.5; (3) 17.54

sale price
sale price of ladder = 80% of £75 = 0.8 × £75
= £60

satisfy
$y = 5x - 11$ $\therefore$ RHS = $5x - 11 = 5(3) - 11 = 15 - 11$
$= 4 = y$ $\therefore$ the point (3,4) satisfies equation

sequence
5, 6, 8, 11, 15, 20

simple interest
interest = 3 × 5% × £500 = 3 × 0.05 × £500
= £75

solution
$2(y + 4) = 12 \Rightarrow 2y + 8 = 12 \Rightarrow 2y = 4$ $\therefore y = 2$

spinner
P(5) = 1/6

square centimetre
1 m^2 = 1 m × 1 m = 100 cm × 100 cm = 10 000 cm^2

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square kilometre
$1\ km^2 = 1\ km \times 1\ km = 1000\ m \times 1000\ m$
$= 1\,000\,000\ m^2$

square metre
$10 \times 6\ m = 60\ m^2$

square millimetre
$1\ cm^2 = 1\ cm \times 1\ cm = 10\ mm \times 10\ mm$
$= 100\ mm^2$

subject of the formula
$v = \sqrt{(u^2 + 2as)} \Rightarrow s = (v^2 - u^2)/2a$

substitute
$v = u + at = 8 + (12 \times 1) = 20$

subtract
$17 - 15 = 2$

sum
$23 + 6 + 15 = 44$

surface area
$2\pi rh + 2\pi r^2 = (2\pi \times 4 \times 15) + 2\pi \times 4^2 = 152\pi$
$= 477.5\ cm^2$

symmetry
A (line), H (line and rotation), Z (rotation)

take out common factors
$3y(y - 2)$

term
5, 6, 8, 11, 15, 20

total
$26 - 13 + 12 + 7 = 32$

transfer
$4x + 1 = 3x - 10 \Rightarrow 4x - 3x = -10 - 1 \therefore x = -11$

trial and improvement
$x^3 + x = 20 \Rightarrow$ try $x = 2$: $2^3 + 2 = 10$ = too small
try $x = 3$: $3^3 + 3 = 30$ = too large
try $x = 2.5$: $2.5^3 + 2.5 = 18.125$ = too small
try $x = 2.6$: $2.6^3 + 2.6 = 20.176$ = slightly too large
$\therefore x = 2.6$ to 1 dp

unitary method
1 pen costs £5.32 ÷ 7 = £0.76
$\therefore$ 5 pens cost 5 × £0.76 = £3.80

valid
the sides of the triangle satisfy Pythagoras' theorem $\therefore$ it is right-angled

value
temperature = $\frac{5}{9}(65 - 32) = \frac{5 \times 33}{9} = 18.3°C$

value added tax
VAT = 17.5% of £27.50 = 0.175 × £27.50 = £4.81
total bill = £27.50 + £4.81 = £32.31

volume
volume = $3 \times 3 \times 7.5 = 67.5\ cm^3$

width
width = $\frac{\text{area}}{\text{length}} = 65 \div 13 = 5\ mm$

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8 Whitehill Terrace
St Andrews
Fife KY16 8RN
tel: 01334 475656
fax: 01334 477392
email: enquiries@leckieandleckie.co.uk
website: www.leckieandleckie.co.uk

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