Chapter 1

Number

1. 0607_m23_qp_22 Q: 1

71 73 75 77 79 81 87

From this list of numbers write down

(a) a prime number

..... [1]

(b) a square number.

..... [1]

---

2. 0607_m23_qp_22 Q: 2

Work out 10% of 250.

..... [1]

---

3. 0607_m23_qp_22 Q: 3

Work out.

(a) 2.04×20

..... [1]

(b) $\frac{0.09}{0.003}$

..... [1]

---

4. 0607_m23_qp_22 Q: 8

$p = 2 \times 10^3$ $q = 8 \times 10^{-5}$

Work out the following, giving each answer in standard form.

(a) pq

..... [2]

(b) $\frac{p}{q}$

..... [2]

---

5. 0607_s23_qp_21 Q: 1

(a) Insert **one** pair of brackets to make the statement correct.

$$3 \times 7 + 2 + 9 = 36$$ [1]

(b) Work out $(0.2)^3$.

..... [1]

(c) Write down a prime number between 80 and 90.

..... [1]

6. 0607_s23_qp_21 Q: 5

(a) Work out $\frac{11}{12}+\frac{3}{4}$.

Give your answer as a mixed number in its simplest form.

..... [2]

(b) Simplify $\frac{a}{x}\div\frac{b}{2y}$.

Give your answer as a single fraction.

..... [1]

---

7. 0607_s23_qp_21 Q: 11

Simplify $\sqrt{27}+\sqrt{12}-\sqrt{108}$.

..... [2]

---

8. 0607_s23_qp_22 Q: 1

Write down

(a) a square number between 101 and 150

..... [1]

(b) a fraction between $\frac{2}{3}$ and $\frac{3}{4}$

..... [1]

(c) an irrational number between 6 and 7.

..... [1]

---

9. 0607_s23_qp_22 Q: 2

Work out.

(a) $-7 \div -2$

..... [1]

(b) $(0.3)^2$

..... [1]

---

10. 0607_s23_qp_22 Q: 6

Find the value of $64^{\frac{1}{3}}$.

..... [1]

---

11. 0607_s23_qp_22 Q: 7

Lee cycles for 60 km at an average speed of 30 km/h.
He then returns along the same route at an average speed of 20 km/h.

Find Lee's average speed for the whole journey.

..... km/h [3]

---

12. 0607_s23_qp_22 Q: 13

Rationalise the denominator and simplify.

$$\frac{2}{3-\sqrt{5}}$$

..... [3]

---

13. 0607_s23_qp_23 Q: 1

29 31 41 49 51 59

From this list, write down **all** the numbers that are prime numbers.

..... [2]

---

14. 0607_s23_qp_23 Q: 3

Work out.

(a) 0.04×0.06

..... [1]

(b) $\frac{0.02}{0.8}$

..... [1]

---

15. 0607_s23_qp_23 Q: 7

(a) Write 0.003 08 in standard form.

..... [1]

(b) Work out $(7 \times 10^6) \times (3 \times 10^{-8})$.

Give your answer in standard form.

..... [2]

---

16. 0607_s23_qp_23 Q: 9

The total cost of 5 pens and 7 pencils is \$6.75 .
Each pencil costs \$0.45 .

Find the cost of one pen.

\$ ..... [3]

---

17. 0607_s23_qp_23 Q: 10

Write 48 as a product of its prime factors.

..... [2]

---

18. 0607_m22_qp_22 Q: 1

Write down a cube number between 10 and 100.

..... [1]

---

19. 0607_m22_qp_22 Q: 2

Work out $(0.1)^4$.

..... [1]

---

20. 0607_m22_qp_22 Q: 3

Alex goes to sleep at 20 40 and wakes up the next morning at 06 10.

Work out the length of time, in hours and minutes, that Alex is asleep.

..... h ..... min [1]

---

21. 0607_m22_qp_22 Q: 5

Work out $\frac{3}{4}-\frac{1}{6}$, giving your answer as a fraction in its lowest terms.

..... [2]

---

22. 0607_m22_qp_22 Q: 6

Divide \$140 in the ratio 2 : 1 : 4.

\$ ..... , \$ ..... , \$ ..... [2]

---

23. 0607_m22_qp_22 Q: 8

Write 4^{-2} as a fraction.

..... [1]

---

24. 0607_m22_qp_22 Q: 9

A train is travelling at a speed of 30 m/s.
The length of the train is 70 m.
The train passes through a station of length 170 m.

Find the time the train takes to pass completely through the station.

..... s [2]

---

25. 0607_m22_qp_22 Q: 13

Rationalise the denominator.

$$\frac{2}{\sqrt{3}}$$

..... [1]

---

26. 0607_m22_qp_22 Q: 14

In this calculation, the three numbers are written in standard form.

$(4 \times 10^{p}) \times (n \times 10^{p+2}) = 3.2 \times 10^{t}$

n, p and t are integers.

(a) Find the value of n.

$n =$ ..... [1]

(b) Find t in terms of p.

$t =$ ..... [1]

---

27. 0607_s22_qp_21 Q: 3

From the list of numbers, write down

(a) the prime number,

..... [1]

(b) the cube number.

..... [1]

---

28. 0607_s22_qp_21 Q: 5

(a) Write 7.297 84 correct to 3 significant figures.

..... [1]

(b) Write 0.000 003 06 in standard form.

..... [1]

---

29. 0607_s22_qp_21 Q: 8

Find the value of $49^{\frac{1}{2}}$.

..... [1]

---

30. 0607_s22_qp_21 Q: 9

Write 90 as the product of its prime factors.

..... [2]

---

31. 0607_s22_qp_21 Q: 13

(a) Simplify fully.

$$\sqrt{75} - \sqrt{48} + \sqrt{12}$$

..... [2]

(b) Rationalise the denominator, giving your answer in its simplest form.

$$\frac{1}{\sqrt{3}+5}$$

..... [2]

---

32. 0607_s22_qp_22 Q: 1

Work out.

$(0.03)^2$

..... [1]

---

33. 0607_s22_qp_22 Q: 2

(a) Write the fraction $\frac{15}{40}$ in its lowest terms.

..... [1]

(b) Work out.

$\frac{2}{3} + \frac{2}{9}$

..... [2]

---

34. 0607_s22_qp_22 Q: 5

Work out $64^{\frac{1}{3}}$.

..... [1]

---

35. 0607_s22_qp_22 Q: 7

Kendra jogs 7 km in 45 minutes.
She then runs at 12 km/h for 30 minutes.

Find her average speed in km/h for the whole journey.

..... km/h [3]

36. 0607_s22_qp_22 Q: 17

(a) Expand the brackets and simplify.

$$\left(\sqrt{a}+\sqrt{b}\right)\left(\sqrt{a}-\sqrt{b}\right)$$

..... [2]

(b) Rationalise the denominator.

$$\frac{1}{\sqrt{7}+\sqrt{6}}$$

..... [1]

(c) Work out the value of

$$\frac{1}{\sqrt{9}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{4}}.$$

..... [2]

37. 0607_s22_qp_23 Q: 1

Work out.

(a) 0.3×0.2

..... [1]

(b) $12 \div 0.4$

..... [1]

---

38. 0607_s22_qp_23 Q: 4

(a) Express 175 as the product of its prime factors.

..... [2]

(b) Kurt has two timers.
One is set to ring every 175 minutes.
The other is set to ring every 70 minutes.

Both timers ring together at 09 15.

Find the time when the timers next ring together.

..... [3]

---

39. 0607_w22_qp_21 Q: 1

Work out.

(a) $1+2-3\times4$

..... [1]

(b) $1+2\times3-4$

..... [1]

---

40. 0607_w22_qp_21 Q: 2

(a) Write $2\frac{1}{4}$ as an improper fraction.

..... [1]

(b) Work out.

$$\frac{7}{8}-\frac{3}{4}$$

..... [1]

---

41. 0607_w22_qp_21 Q: 4

Change $0.2\,m^2$ into cm^2.

..... cm^2 [1]

---

42. 0607_w22_qp_21 Q: 5

Work out $4^{\frac{3}{2}}$.

..... [1]

---

43. 0607_w22_qp_21 Q: 6

(a) Work out $(1.5\times10^{1})\times(7\times10^{-3})$.
Give your answer in standard form.

..... [2]

(b) Work out $(6.5\times10^{-2})+(7.8\times10^{-3})$.
Give your answer in standard form.

..... [2]

---

44. 0607_w22_qp_22 Q: 4

You are given that $\sqrt{7}=2.65$ and $\sqrt{70}=8.37$, each correct to 2 decimal places.

Use this information to find the value of

(a) $\sqrt{700}$,

..... [1]

(b) $\sqrt{280}$.

..... [1]

---

45. 0607_w22_qp_22 Q: 8

Find the value of $125^{-\frac{1}{3}}$.

..... [1]

---

46. 0607_w22_qp_23 Q: 3

$1\,\text{m}^2 = 10^n\,\text{cm}^2$

Find the value of n.

$n =$ ..... [1]

---

47. 0607_w22_qp_23 Q: 4

Work out $1\frac{1}{3} - \frac{5}{6}$.

..... [2]

---

48. 0607_w22_qp_23 Q: 12

Simplify $(3 \times 10^{85}) \times (7 \times 10^{15})$.
Give your answer in standard form.

..... [2]

---

49. 0607_w22_qp_23 Q: 14

Rationalise the denominator.

$$\frac{5}{\sqrt{3}-\sqrt{2}}$$

..... [2]

---

50. 0607_m21_qp_22 Q: 3

Find the highest common factor (HCF) of 84 and 72.

..... [1]

---

51. 0607_m21_qp_22 Q: 4

Solve.

$|x|+2=7$

..... [1]

---

52. 0607_m21_qp_22 Q: 6

Find the value of p when $2^6 \div 4^p = 2^7$.

$p =$ ..... [3]

---

53. 0607_m21_qp_22 Q: 13

Rationalise the denominator and simplify.

$$\frac{2}{\sqrt{5}+1}$$

..... [3]

---

54. 0607_s21_qp_21 Q: 1

Work out.

(a) $3 - 0.018$

..... [1]

(b) 0.04^2

..... [1]

(c) $\frac{0.08}{0.2}$

..... [1]

---

55. 0607_s21_qp_21 Q: 2

(a) Write 5249.6 correct to two significant figures.

..... [1]

(b) Write 0.0030626 correct to three decimal places.

..... [1]

---

56. 0607_s21_qp_21 Q: 5

Find the value of

(a) 64^0,

..... [1]

(b) $64^{\frac{1}{3}}$.

..... [1]

---

57. 0607_s21_qp_22 Q: 1

Work out $\frac{3.6}{0.004}$.

..... [1]

---

58. 0607_s21_qp_22 Q: 3

Work out $2\frac{1}{2} \div 3\frac{1}{4}$.

Give your answer as a fraction in its simplest form.

..... [3]

---

59. 0607_s21_qp_22 Q: 4

Insert **two** pairs of brackets to make this statement correct.

$$3 \times 7 - 3 + 4 \times 2 = 32$$

[1]

---

60. 0607_s21_qp_22 Q: 8

Expand and simplify $(2\sqrt{3} - 5)(4 + \sqrt{3})$.

..... [2]

---

61. 0607_s21_qp_22 Q: 10

$c = 4 \times 10^7$ $d = 5.8 \times 10^6$

Work out, giving your answers in standard form,

(a) c^2 ,

..... [2]

(b) $c - d$.

..... [2]

---

62. 0607_s21_qp_23 Q: 1

Write 84% as a fraction in its lowest terms.

..... [1]

---

63. 0607_s21_qp_23 Q: 2

Work out $(1 - 0.8)^2$.

..... [1]

---

64. 0607_s21_qp_23 Q: 8

Find the value of $|-4| + 4$.

..... [1]

---

65. 0607_s21_qp_23 Q: 17

Simplify by rationalising the denominator. $\dfrac{3}{2\sqrt{2}-1}$

..... [2]

---

66. 0607_w21_qp_21 Q: 1

(a) Write 4 347 849 correct to the nearest ten thousand.

..... [1]

(b) Write 0.004 024 3 correct to 2 significant figures.

..... [1]

---

67. 0607_w21_qp_21 Q: 2

90 91 92 93 94 95 96 97 98 99

From this list, write down

(a) a prime number,

..... [1]

(b) a common multiple of 4 and 6.

..... [1]

---

68. 0607_w21_qp_21 Q: 6

(a) Write 0.0000586 in standard form.

..... [1]

(b) $(2\times10^{a})\div(8\times10^{b})=k\times10^{n}$ where $1\leqslant k<10$.

(i) Find the value of k.

$k=$ ..... [1]

(ii) Write an expression for n in terms of a and b.

$n=$ ..... [1]

---

69. 0607_w21_qp_22 Q: 1

Work out.

$3+7\times2+5$

..... [1]

---

70. 0607_w21_qp_22 Q: 3

(a) A number is greater than 1.
The number is also both a square number and a cube number.

Write down a possible value of this number.

..... [1]

(b) Write down a prime number between 90 and 100.

..... [1]

---

71. 0607_w21_qp_22 Q: 5

Work out.

$$\frac{3}{4} \div \frac{8}{9}$$

..... [2]

---

72. 0607_w21_qp_22 Q: 12

Work out the value of $32^{\frac{2}{5}}$.

..... [1]

---

73. 0607_w21_qp_22 Q: 14

Simplify.

$$\sqrt{125} + \sqrt{80}$$

..... [2]

---

74. 0607_w21_qp_22 Q: 17

$$3^x = 27^{x+2}$$

Find the value of x.

$x =$ ..... [2]

---

75. 0607_w21_qp_23 Q: 1

Work out.

(a) $(-2)+(-3)-(-4)$

..... [1]

(b) $(-2)\times(-3)\times(-4)$

..... [1]

---

76. 0607_w21_qp_23 Q: 2

91 93 95 97 99

From this list write down a prime number.

..... [1]

---

77. 0607_w21_qp_23 Q: 3

\$126 is divided into 3 shares in the ratio $1:2:4$.

Find the value of the largest share.

\$ ..... [2]

---

78. 0607_w21_qp_23 Q: 6

(a) Simplify.

$$\sqrt{75} - \sqrt{27}$$

..... [2]

(b) Rationalise the denominator and simplify your answer.

$$\frac{10}{5 - \sqrt{5}}$$

..... [3]

---

79. 0607_s20_qp_21 Q: 3

Work out $\frac{3}{4} \div 2\frac{1}{2}$.

Give your answer as a fraction in its lowest terms.

..... [3]

---

80. 0607_s20_qp_21 Q: 4

A truck of length 10 m passes a gate of length 2 m.
The speed of the truck is 8 m/s.

Find the time the truck takes to completely pass the gate.

..... s [2]

---

81. 0607_s20_qp_21 Q: 10

When Jack sells a computer for $264 he makes a profit of 20%.

Work out the price Jack paid for the computer.

$ ..... [2]

---

82. 0607_s20_qp_21 Q: 13

Rationalise the denominator.

$$\frac{9}{\sqrt{7}-2}$$

..... [2]

---

83. 0607_s20_qp_22 Q: 1

31 37 39 49 51 53 77 87

From this list write down **all** the prime numbers.

..... [2]

---

84. 0607_s20_qp_22 Q: 2

Work out 15% of 600.

..... [2]

---

85. 0607_s20_qp_22 Q: 3

Work out.

(a) 0.06×0.12

..... [1]

(b) 0.2^3

..... [1]

(c) $\frac{0.4}{0.08}$

..... [1]

---

86. 0607_s20_qp_22 Q: 7

Work out the following, giving each answer in standard form.

(a) $(4.3 \times 10^4) \times (3 \times 10^{-4})$

..... [2]

(b) $(6 \times 10^{-2}) + (3 \times 10^{-3})$

..... [2]

---

87. 0607_s20_qp_23 Q: 1

(a) Write 0.047 996 correct to 4 decimal places.

..... [1]

(b) Write 60 449 correct to 3 significant figures.

..... [1]

---

88. 0607_s20_qp_23 Q: 2

Work out $4\frac{1}{4} - 1\frac{5}{6}$.

Give your answer as a mixed number in its simplest form.

..... [3]

---

89. 0607_s20_qp_23 Q: 7

Divide 96 cm in the ratio 5 : 3.

..... cm , ... cm [2]

---

90. 0607_w20_qp_21 Q: 1

Work out.

$1 + 2 - 3 \times 4$

..... [1]

---

91. 0607_w20_qp_21 Q: 2

Work out.

$-48 \div -8$

..... [1]

---

92. 0607_w20_qp_21 Q: 5

Divide 120 in the ratio 3 : 5.

..... , ... [2]

---

93. 0607_w20_qp_21 Q: 9

A shop has a sale and all prices are reduced by 20%.

(a) The original price of a shirt is \$16.

Find the sale price of the shirt.

\$ ..... [2]

(b) The sale price of a dress is \$40.

Find the original price of the dress.

\$ ..... [2]

---

94. 0607_w20_qp_21 Q: 11

Work out $4^{-\frac{3}{2}}$.

..... [2]

---

95. 0607_w20_qp_22 Q: 2

Work out the exact value of $\sqrt{2\frac{7}{9}}$.

..... [2]

---

96. 0607_w20_qp_22 Q: 4

Work out $\left(64\right)^{-\frac{2}{3}}$.

..... [2]

---

97. 0607_w20_qp_22 Q: 8

Written as the product of its prime factors, $540 = 2^2 \times 3^3 \times 5$.

(a) Write 360 as a product of its prime factors.

..... [2]

(b) Find the highest common factor (HCF) of 540 and 360.

..... [1]

(c) $540n$ is a cube number.

Find the smallest possible value of n.

..... [1]

---

98. 0607_w20_qp_23 Q: 1

Work out $(0.2)^3$.

..... [1]

---

99. 0607_w20_qp_23 Q: 3

Work out $\frac{5}{6} \div \frac{15}{16}$.

Give your answer as a fraction in its lowest terms.

..... [2]

---

100. 0607_s19_qp_21 Q: 1

Work out.

(a) $(0.3)^2$

..... [1]

(b) $\frac{4}{9} - \frac{1}{6}$

..... [2]

---

101. 0607_s19_qp_21 Q: 2

Divide 360 in the ratio 7 : 2.

..... , ... [2]

---

102. 0607_s19_qp_21 Q: 7

Work out $(5.2 \times 10^{18}) - (2.4 \times 10^{17})$.
Give your answer in standard form.

..... [2]

---

103. 0607_s19_qp_21 Q: 8

A map is drawn to a scale of 1 cm to 5 km.

(a) On the map, the distance between two towns is 4.8 cm.

Find the actual distance between the towns.

..... km [1]

(b) An island has an area of 75 km^2.

Find the area of the island on the map.

..... cm^2 [2]

---

104. 0607_s19_qp_22 Q: 6

Work out $\frac{4}{5} \div 1\frac{1}{2}$.

..... [2]

---

105. 0607_s19_qp_22 Q: 10

Work out the value of $\left(\frac{1}{27}\right)^{-\frac{1}{3}}$.

..... [1]

---

106. 0607_s19_qp_22 Q: 13

Work out $1.1 \times 10^{30} + 1.1 \times 10^{29}$, giving your answer in standard form.

..... [2]

---

107. 0607_s19_qp_22 Q: 14

Find the highest common factor (HCF) of $8p^4q^8$ and $4p^3q^{10}$.

..... [2]

---

108. 0607_s19_qp_22 Q: 16

Rationalise the denominator.

$$\frac{1}{\sqrt{5}-1}$$

..... [2]

---

109. 0607_s19_qp_23 Q: 1

Work out.

$$(-2)^3$$

..... [1]

---

110. 0607_s19_qp_23 Q: 7

Work out.

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

..... [3]

---

111. 0607_s19_qp_23 Q: 8

Work out the following.
Give each answer in standard form.

(a) $(1 \times 10^1) + (2 \times 10^{-2})$

..... [2]

(b) $(1 \times 10^1) \div (2 \times 10^{-2})$

..... [2]

---

112. 0607_s19_qp_23 Q: 11

A travel agent has the following exchange rates.

£1 = $1.25

£1 = €1.20

(a) Change £200 into dollars ($).

$ ..... [1]

(b) Change $100 into euros (€).

€ ..... [2]

---

113. 0607_s19_qp_23 Q: 15

Erica walks 13 km in 2 hours.
She then runs at a speed of 12 km/h for 45 minutes.

Find her average speed in km/h for the whole journey.

..... km/h [3]

---

114. 0607_w19_qp_21 Q: 1

Work out $15 + 14 \times 2$.

..... [1]

---

115. 0607_w19_qp_21 Q: 2

Here is a list of numbers.

21 23 29 33 39 63 91 92

From the list, write down

(a) a factor of 46, ... [1]

(b) a prime number. ..... [1]

---

116. 0607_w19_qp_21 Q: 3

List the integer values of x such that $-3 < x \leqslant 1$.

..... [2]

---

117. 0607_w19_qp_21 Q: 5

Work out $\frac{3}{4} \div 4\frac{1}{2}$.

Give your answer as a fraction in its lowest terms.

..... [2]

---

118. 0607_w19_qp_21 Q: 8

Find the value of $8^{\frac{4}{3}}$.

..... [1]

---

119. 0607_w19_qp_21 Q: 13

(a) Simplify $\sqrt{20}+\sqrt{125}$.

..... [2]

(b) Rationalise the denominator and simplify your answer.

$$\frac{18}{\sqrt{7}-1}$$

..... [2]

---

120. 0607_w19_qp_21 Q: 15

Simplify $(t^{27})^{\frac{1}{3}}$.

..... [1]

---

121. 0607_w19_qp_22 Q: 1

8 27 49 51 53 55 99

From this list write down the square number.

..... [1]

---

122. 0607_w19_qp_22 Q: 3

Write each number in standard form.

(a) 28 010

..... [1]

(b) 0.100 209

..... [1]

---

123. 0607_w19_qp_22 Q: 5

Xian walks 8 km in $1\frac{1}{2}$ hours.

She then runs 10 km in 45 minutes.

Find her average speed in km/h for the whole journey.

..... km/h [3]

---

124. 0607_w19_qp_22 Q: 8

Magda buys 6 apples and 4 oranges for a total cost of \$4.18 .
Oranges cost \$0.52 each.

Find the cost of one apple.

\$ ..... [3]

---

125. 0607_w19_qp_22 Q: 12

(a) Simplify.

$$\sqrt{300} - \sqrt{27}$$

..... [2]

(b) Rationalise the denominator and simplify your answer.

$$\frac{14}{3 - \sqrt{2}}$$

..... [3]

---

126. 0607_w19_qp_23 Q: 1

Work out.

(a) $(-4)^2$

..... [1]

(b) $(0.3)^2$

..... [1]

---

127. 0607_w19_qp_23 Q: 2

(a) Write down a prime number between 80 and 90.

..... [1]

(b) Write down a triangle number between 30 and 50.

..... [1]

---

128. 0607_w19_qp_23 Q: 4

A cat eats $1\frac{2}{3}$ tins of food each day.

How many tins are needed for one week?

..... [2]

---

129. 0607_s18_qp_21 Q: 1

(a) Work out $5-7\times2+8$.

.....[1]

(b) Find $\sqrt[3]{0.001}$.

.....[1]

---

130. 0607_s18_qp_21 Q: 4

(a) Write 0.68 as a fraction in its lowest terms.

.....[1]

(b) Work out $\frac{3}{7}\div\frac{8}{9}$.

.....[2]

---

131. 0607_s18_qp_21 Q: 12

(a) Simplify fully.

$$\sqrt{700}$$

..... [1]

(b) Rationalise the denominator.

$$\frac{1}{7-\sqrt{2}}$$

..... [2]

---

132. 0607_s18_qp_22 Q: 4

Write down a prime number between 60 and 70.

..... [1]

---

133. 0607_s18_qp_22 Q: 6

Write 36 as a product of prime factors.

..... [2]

---

134. 0607_s18_qp_22 Q: 9

Work out.

$$4\frac{2}{5} - 1\frac{2}{3}$$

..... [3]

---

135. 0607_s18_qp_22 Q: 12

Simplify.

$$\sqrt{75} - \sqrt{12} + \sqrt{27}$$

..... [2]

---

136. 0607_s18_qp_23 Q: 2

Find the highest common factor (HCF) of 96 and 60.

..... [1]

---

137. 0607_s18_qp_23 Q: 4

Write down the value of 17^0.

..... [1]

---

138. 0607_s18_qp_23 Q: 6

(a) Find a fraction, n, that satisfies this inequality.

$$\frac{5}{7} < n < \frac{6}{7}$$

$n =$ ..... [1]

(b) Write down an irrational number, m, that satisfies this inequality.

$$4 < m < 7$$

$m =$ ..... [1]

---

139. 0607_s18_qp_23 Q: 8

Work out $(5.6 \times 10^{-7}) - (7.8 \times 10^{-8})$.
Give your answer in standard form.

..... [2]

---

140. 0607_s18_qp_23 Q: 9

Kim has a piece of rope 18 metres long.
He cuts the rope into two pieces.
The lengths of the pieces are in the ratio 1 : 5.

Calculate the length of each piece.

..... m

..... m [2]

---

141. 0607_w18_qp_21 Q: 1

Work out.

-7×-5

..... [1]

---

142. 0607_w18_qp_21 Q: 4

Write 3^{-2} as a fraction.

..... [1]

---

143. 0607_w18_qp_21 Q: 6

Find the lowest common multiple (LCM) of 12 and 15.

..... [2]

---

144. 0607_w18_qp_21 Q: 11

Simplify.

$\sqrt{32} - \sqrt{72} + \sqrt{50}$

..... [2]

---

145. 0607_w18_qp_21 Q: 17

Rationalise the denominator, giving your answer in its simplest form.

$$\frac{5+\sqrt{3}}{5-\sqrt{3}}$$

..... [3]

---

146. 0607_w18_qp_22 Q: 1

(a) Write 49 059 300 correct to 3 significant figures.

..... [1]

(b) Write your answer to **part (a)** in standard form.

..... [1]

---

147. 0607_w18_qp_22 Q: 2

Find $\sqrt[3]{3\frac{3}{8}}$.

..... [2]

---

148. 0607_w18_qp_23 Q: 5

Work out $\frac{5}{6} \div \frac{15}{16}$.

Give your answer in its lowest terms.

..... [2]

---

149. 0607_w18_qp_23 Q: 6

(a) Simplify $\sqrt{98}$.

..... [1]

(b) Rationalise the denominator.

$$\frac{1}{3-\sqrt{5}}$$

..... [2]

---

150. 0607_s17_qp_21 Q: 1

Work out.

$(0.6)^2$

..... [1]

---

151. 0607_s17_qp_21 Q: 2

(a) Write the fraction $\frac{16}{60}$ in its lowest terms.

..... [1]

(b) Work out.

$$\frac{4}{11}+\frac{5}{11}$$

..... [1]

---

152. 0607_s17_qp_21 Q: 5

Write down the value of 16^0.

..... [1]

---

153. 0607_s17_qp_21 Q: 6

Find the lowest common multiple (LCM) of 20 and 24.

..... [2]

---

154. 0607_s17_qp_21 Q: 13

By rationalising the denominator, simplify

$$\frac{12}{\sqrt{6}-2}.$$

..... [3]

---

155. 0607_s17_qp_22 Q: 1

(a) Write 5.309 87 correct to 3 decimal places.

..... [1]

(b) Write 0.003 648 9 correct to 3 significant figures.

..... [1]

---

156. 0607_s17_qp_23 Q: 1

Work out $\sqrt{2\frac{1}{4}}$.

..... [2]

---

157. 0607_s17_qp_23 Q: 2

Change $\frac{7}{25}$ to a percentage.

..... % [1]

---

158. 0607_s17_qp_23 Q: 3

$|x| = 5$

Write down the two possible values of x.

$x =$ ..... or $x =$ ..... [1]

---

159. 0607_s17_qp_23 Q: 6

Work out $\frac{4\times10^{7}}{8\times10^{22}}$.

Give your answer in standard form.

..... [2]

---

160. 0607_s17_qp_23 Q: 12

Find the value of $16^{\frac{3}{4}}$.

..... [1]

---

161. 0607_s17_qp_23 Q: 13

(a) Simplify.

$$(4-\sqrt{3})(4+\sqrt{3})$$

..... [2]

(b) Rationalise the denominator.

$$\frac{5}{\sqrt{7}}$$

..... [1]

---

162. 0607_w17_qp_21 Q: 1

By rounding each number correct to 1 significant figure, estimate the value of

$$\frac{189.6 \times 41.28}{0.00509 + 0.00298}.$$

..... [3]

---

163. 0607_w17_qp_21 Q: 2

Written as the product of their prime factors,

$7056 = 2^4 \times 3^2 \times 7^2$ and $8232 = 2^3 \times 3 \times 7^3$.

Giving your answers as the product of prime factors, find

(a) the highest common factor (HCF) of 7056 and 8232,

..... [1]

(b) the lowest common multiple (LCM) of 7056 and 8232,

..... [1]

(c) $\sqrt{7056}$.

..... [1]

---

164. 0607_w17_qp_21 Q: 4

Work out $\frac{3}{8}-\frac{1}{6}$, giving your answer as a fraction in its lowest terms.

..... [2]

---

165. 0607_w17_qp_21 Q: 7

Work out, giving your answer in standard form.

$$(6.3\times10^{4})+(5.6\times10^{5})$$

..... [2]

---

166. 0607_w17_qp_21 Q: 12

Rationalise the denominator and simplify.

$$\frac{14\sqrt{2}}{3+\sqrt{2}}$$

..... [3]

---

167. 0607_w17_qp_22 Q: 3

Find the highest common factor (HCF) of 30, 48 and 66.

..... [1]

---

168. 0607_w17_qp_22 Q: 8

Work out $(3.2\times10^{20})+(2.3\times10^{21})$, giving your answer in standard form.

..... [2]

---

169. 0607_w17_qp_22 Q: 9

Find the value of $(0.1)^2$.

..... [1]

---

170. 0607_w17_qp_22 Q: 13

(a) Simplify $\sqrt{18}+\sqrt{72}$.

..... [2]

(b) Rationalise the denominator.

$$\frac{1}{\sqrt{5}+2}$$

..... [2]

---

171. 0607_w17_qp_23 Q: 1

27 39 49 51 53 55 58

From this list write down the prime number.

..... [1]

---

172. 0607_w17_qp_23 Q: 4

$144 is shared in the ratio 1 : 7.

Find the value of the smaller share.

$ ..... [2]

---

173. 0607_w17_qp_23 Q: 5

Ciara buys 6 red pens and 4 blue pens for a total cost of $3.90 .
Blue pens cost $0.45 each.

Find the cost of one red pen.

$ ..... [3]

---

174. 0607_w17_qp_23 Q: 6

Write each number in standard form.

(a) 58 000

..... [1]

(b) 0.008 09

..... [1]

---

175. 0607_w17_qp_23 Q: 11

Rationalise the denominator and simplify your answer.

$$\frac{32}{\sqrt{8}}$$

..... [2]

Appendix A

Answers

1. 0607_m23_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
(a)	71 or 73 or 79	**1**	
(b)	81	**1**	

2. 0607_m23_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
	25	**1**	

3. 0607_m23_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
(a)	40.8[0]	**1**	
(b)	30 or 3×10^{1}	**1**	

4. 0607_m23_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
(a)	1.6×10^{-1} cao	**2**	**B1** for correct answer not in standard form seen
(b)	2.5×10^{7} cao	**2**	**B1** for correct answer not in standard form seen If 0 scored **SC1** for figs 25 seen

5. 0607_s23_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
(a)	$3 \times (7 + 2) + 9 = 36$	**1**	
(b)	0.008 oe	**1**	
(c)	83 or 89	**1**	

6. 0607_s23_ms_21 Q: 5

Question	Answer	Marks	Partial Marks
(a)	$1\frac{2}{3}$ cao	**2**	**M1** for $\frac{11}{12} + \frac{9}{12}$
(b)	$\frac{2ay}{bx}$ final answer	**1**	

7. 0607_s23_ms_21 Q: 11

Question	Answer	Marks	Partial Marks
	$-\sqrt{3}$	**2**	**B1** for two of $3\sqrt{3}$ or $2\sqrt{3}$ or $6\sqrt{3}$

8. 0607_s23_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
(a)	121 or 144	**1**	
(b)	Any correct fraction	**1**	
(c)	Any correct irrational number	**1**	

9. 0607_s23_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
(a)	3.5 or $3\frac{1}{2}$	**1**	
(b)	0.09	**1**	

10. 0607_s23_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	4 cao	**1**	

11. 0607_s23_ms_22 Q: 7

Question	Answer	Marks	Partial Marks
	24	3	**B2** for 3[h] and 2[h] soi by 5 [h] or **B1** for 60/30 or 60/20 or 3[h] If **B0** or **B1** scored, then **M1** for 120 ÷ *their* total time (*their* total time MUST be greater than 2)

12. 0607_s23_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
	$\frac{3+\sqrt{5}}{2}$ cao final answer	3	**B2** for $\frac{2(3+\sqrt{5})}{4}$ or $\frac{6+2\sqrt{5}}{4}$ or **M1** for $\times\frac{3+\sqrt{5}}{3+\sqrt{5}}$

13. 0607_s23_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
	29 31 41 59	2	**B1** for at least two correct

14. 0607_s23_ms_23 Q: 3

Question	Answer	Marks	Partial Marks
(a)	0.0024 oe	1	
(b)	0.025 oe	1	

15. 0607_s23_ms_23 Q: 7

Question	Answer	Marks	Partial Marks
(a)	3.08×10^{-3} cao	1	
(b)	2.1×10^{-1} cao	2	**M1** for correct answer not in standard form

16. 0607_s23_ms_23 Q: 9

Question	Answer	Marks	Partial Marks
	0.72	3	**M2** for $\frac{6.75-\textit{their}\,(7\times0.45)}{5}$ oe or **M1** for $6.75-7\times0.45$ oe if 0 scored, **SC2** for 72

17. 0607_s23_ms_23 Q: 10

Question	Answer	Marks	Partial Marks
	$2^4 \times 3$ or $2 \times 2 \times 2 \times 2 \times 3$	**2**	**M1** for 2^k and 3 seen

18. 0607_m22_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	27 or 64	**1**	

19. 0607_m22_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
	0.0001	**1**	

20. 0607_m22_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
	9h 30min	**1**	

21. 0607_m22_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
	$\frac{7}{12}$	**2**	**M1** for $\frac{9}{12} - \frac{2}{12}$ oe i.e. common denominator

22. 0607_m22_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	40, 20, 80	**2**	**M1** for 140 ÷ (2 + 1 + 4) soi

23. 0607_m22_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
	$\frac{1}{16}$ cao	**1**	

24. 0607_m22_ms_22 Q: 9

Question	Answer	Marks	Partial Marks
	8	**2**	**M1** for (170 + 70) ÷ 30 If 0 scored **SC1** for answer $5\frac{2}{3}$ oe

25. 0607_m22_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
	$\frac{2\sqrt{3}}{3}$	**1**	

26. 0607_m22_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
(a)	8	**1**	
(b)	$2p + 3$	**1**	If 0 scored in **(a)** and **(b)** **SC1** for $n = 0.8$ and $2p + 2$

27. 0607_s22_ms_21 Q: 3

Question	Answer	Marks	Partial Marks
(a)	29 only	**1**	
(b)	27 only	**1**	

28. 0607_s22_ms_21 Q: 5

Question	Answer	Marks	Partial Marks
(a)	7.30 cao	**1**	
(b)	3.06×10^{-6} final answer cao	**1**	

29. 0607_s22_ms_21 Q: 8

Question	Answer	Marks	Partial Marks
	7	**1**	

30. 0607_s22_ms_21 Q: 9

Question	Answer	Marks	Partial Marks
	$2 \times 3 \times 3 \times 5$ or $2 \times 3^2 \times 5$ final answer	**2**	**M1** for 2, 3 and 5 seen as factors

31. 0607_s22_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
(a)	$3\sqrt{3}$ final answer	**2**	**M1** for either $5\sqrt{3}$ or $2\sqrt{3}$

Question	Answer	Marks	Partial Marks
(b)	$-\frac{\sqrt{3}-5}{22}$ or $\frac{5-\sqrt{3}}{22}$ oe final answer	2	**M1** for $\times\frac{\sqrt{3}-5}{\sqrt{3}-5}$ oe Must be convinced that $\sqrt{3}-5$ and NOT $\sqrt{3-5}$

32. 0607_s22_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	0.0009	1	

33. 0607_s22_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
(a)	$\frac{3}{8}$ final answer	1	
(b)	$\frac{8}{9}$	2	**M1** for both fractions correct with same common denominator

34. 0607_s22_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
	4 only	1	

35. 0607_s22_ms_22 Q: 7

Question	Answer	Marks	Partial Marks
	10.4 or $\frac{156}{15}$ oe	3	**M2** for $\frac{(7+12\times\frac{30}{60})}{45+30}\times 60$ or $\frac{(7+6)}{0.75+0.5}$ oe or **M1** for (*their* total dist) / (*their* total time)

36. 0607_s22_ms_22 Q: 17

Question	Answer	Marks	Partial Marks
(a)	$a-b$	2	**M1** for $\sqrt{a}\sqrt{a}-\sqrt{a}\sqrt{b}+\sqrt{b}\sqrt{a}-\sqrt{b}\sqrt{b}$ oe
(b)	$\sqrt{7}-\sqrt{6}$	1	
(c)	1	2	**M1** for at least 3 of $\sqrt{9}-\sqrt{8}+\sqrt{8}-\sqrt{7}.....-\sqrt{4}$ or **B1** for $\sqrt{9}-\sqrt{4}$

37. 0607_s22_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
(a)	0.06	**1**	
(b)	30	**1**	

38. 0607_s22_ms_23 Q: 4

Question	Answer	Marks	Partial Marks
(a)	$5 \times 5 \times 7$ or $5^2 \times 7$	**2**	**B1** for 5 and 7 identified as factors
(b)	1505	**3**	**B2** for [LCM=] 350 or **B1** for $2 \times 5 \times 7$ or 1025, 1135, 1245... or 70, 140, 210, 280, 350

39. 0607_w22_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
(a)	–9	**1**	
(b)	3	**1**	

40. 0607_w22_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
(a)	$\frac{9}{4}$	**1**	
(b)	$\frac{1}{8}$ oe	**1**	

41. 0607_w22_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
	2000	**1**	

42. 0607_w22_ms_21 Q: 5

Question	Answer	Marks	Partial Marks
	8	**1**	

43. 0607_w22_ms_21 Q: 6

Question	Answer	Marks	Partial Marks
(a)	1.05×10^{-1} cao	**2**	**M1** for equivalent non-standard form answer e.g. 10.5×10^{-2}
(b)	7.28×10^{-2} cao	**2**	**M1** for figs 728 seen

44. 0607_w22_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
(a)	26.5	1	
(b)	16.74 or 16.7	1	

45. 0607_w22_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
	$\frac{1}{5}$ or 0.2	1	

46. 0607_w22_ms_23 Q: 3

Question	Answer	Marks	Partial Marks
	4	1	

47. 0607_w22_ms_23 Q: 4

Question	Answer	Marks	Partial Marks
	$\frac{3}{6}$ oe	2	**M1** for correct working with common denominator or better

48. 0607_w22_ms_23 Q: 12

Question	Answer	Marks	Partial Marks
	2.1×10^{101} cao	2	**B1** for 21×10^{100}

49. 0607_w22_ms_23 Q: 14

Question	Answer	Marks	Partial Marks
	$5\left(\sqrt{3}+\sqrt{2}\right)$	2	**M1** for $\times\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}}$

50. 0607_m21_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
	12	1	

51. 0607_m21_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
	5 and –5	1	

52. 0607_m21_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	$[p =] -\frac{1}{2}$	3	**B1** for $4^p = 2^{2p}$ soi **M1** for $6-2p=7$ oe If 0 scored then **SC1** for $2^6 \div 2^7 = 2^{-1}$ or $2^7 \div 2^6 = 2^1$ oe

53. 0607_m21_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
	$\frac{\sqrt{5}-1}{2}$ or $\frac{1}{2}\left(\sqrt{5}-1\right)$ or $\frac{\sqrt{5}}{2}-\frac{1}{2}$	3	**M2** for $\frac{2\left(\sqrt{5}-1\right)}{5-1}$ or $\frac{2\sqrt{5}-2}{5-1}$ or **M1** for $\times\frac{\sqrt{5}-1}{\sqrt{5}-1}$

54. 0607_s21_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
(a)	2.982	1	
(b)	[0].0016	1	
(c)	[0].4	1	

55. 0607_s21_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
(a)	5200 cao	1	
(b)	0.003 cao	1	

56. 0607_s21_ms_21 Q: 5

Question	Answer	Marks	Partial Marks
(a)	1	1	
(b)	4	1	

57. 0607_s21_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	900	1	

58. 0607_s21_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
	$\frac{10}{13}$ final answer	3	**B2** for equivalent fraction or $\frac{5}{2}\times\frac{4}{13}$ or $\frac{10}{4}\div\frac{13}{4}$ or **B1** for $\frac{5}{2}$ and $\frac{13}{4}$ soi

59. 0607_s21_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
	$(3\times(7-3)+4)\times 2=32$	1	

60. 0607_s21_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
	$3\sqrt{3}-14$ or $-14+3\sqrt{3}$	2	**B1** for $3\sqrt{3}+k$ or $k\sqrt{3}-14$ or $8\sqrt{3}+6-20-5\sqrt{3}$

61. 0607_s21_ms_22 Q: 10

Question	Answer	Marks	Partial Marks
(a)	1.6×10^{15}	2	**B1** for equivalent
(b)	3.42×10^{7}	2	**B1** for figs 342

62. 0607_s21_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
	$\frac{21}{25}$ cao	1	

63. 0607_s21_ms_23 Q: 2

Question	Answer	Marks	Partial Marks
	0.04	1	

64. 0607_s21_ms_23 Q: 8

Question	Answer	Marks	Partial Marks
	8	1	

65. 0607_s21_ms_23 Q: 17

Question	Answer	Marks	Partial Marks
	$\frac{3(2\sqrt{2}+1)}{7}$ or $\frac{6\sqrt{2}+3}{7}$	2	**M1** for $\times\frac{2\sqrt{2}+1}{2\sqrt{2}+1}$

66. 0607_w21_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
(a)	4350000	1	
(b)	0.0040	1	

67. 0607_w21_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
(a)	97	1	
(b)	96	1	

68. 0607_w21_ms_21 Q: 6

Question	Answer	Marks	Partial Marks
(a)	5.86×10^{-5} cao	1	
(b)(i)	2.5	1	
(b)(ii)	$a-b-1$	1	

69. 0607_w21_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	22	1	

70. 0607_w21_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
(a)	64	1	
(b)	97 only	1	

71. 0607_w21_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
	$\frac{27}{32}$	2	**M1** for $\frac{3}{4}\times\frac{9}{8}$ or $\frac{27}{36}\div\frac{32}{36}$ oe

72. 0607_w21_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
	4	1	

73. 0607_w21_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	$9\sqrt{5}$	2	**B1** for $5\sqrt{5}$ or $4\sqrt{5}$

74. 0607_w21_ms_22 Q: 17

Question	Answer	Marks	Partial Marks
	–3	2	**M1** for $3^{3(x+2)}$ oe or better

75. 0607_w21_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
(a)	–1	1	
(b)	–24	1	

76. 0607_w21_ms_23 Q: 2

Question	Answer	Marks	Partial Marks
	97	1	

77. 0607_w21_ms_23 Q: 3

Question	Answer	Marks	Partial Marks
	72	2	**M1** for $126 \div 7$ oe

78. 0607_w21_ms_23 Q: 6

Question	Answer	Marks	Partial Marks
(a)	$2\sqrt{3}$	2	**M1** for $5\sqrt{3}$ or $3\sqrt{3}$
(b)	$\frac{5+\sqrt{5}}{2}$ or $\frac{1}{2}(5+\sqrt{5})$	3	**M2** for $\frac{10(5+\sqrt{5})}{25-5}$ or **M1** for $\times\frac{(5+\sqrt{5})}{(5+\sqrt{5})}$

79. 0607_s20_ms_21 Q: 3

Question	Answer	Marks	Partial Marks
	$\frac{3}{10}$	3	**M2** for $\frac{3}{4}\times\frac{2}{5}$ or $\frac{15}{20}\div\frac{50}{20}$ oe or **M1** for $\frac{5}{2}$ or $\frac{2}{5}$ seen

80. 0607_s20_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
	1.5 oe	2	**M1** for $\frac{10+2}{8}$

81. 0607_s20_ms_21 Q: 10

Question	Answer	Marks	Partial Marks
	220	2	**M1** for $\frac{264}{1+\frac{20}{100}}$ oe

82. 0607_s20_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
	$3(\sqrt{7}+2)$ or $3\sqrt{7}+6$	2	**M1** for $\times\frac{\sqrt{7}+2}{\sqrt{7}+2}$

83. 0607_s20_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	31 37 53	2	**B1** for a correct prime

84. 0607_s20_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
	90	2	**M1** for 0.15×600 oe or **B1** for a correct percentage stated, e.g. $10\% = 60$

85. 0607_s20_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
(a)	0.0072 oe	1	
(b)	0.008 oe	1	
(c)	5	1	

86. 0607_s20_ms_22 Q: 7

Question	Answer	Marks	Partial Marks
(a)	$1.29\times10^{[1]}$	2	**B1** for equivalent answer not in standard form or figs 129
(b)	6.3×10^{-2}	2	**B1** for equivalent answer not in standard form or figs 63

87. 0607_s20_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
(a)	0.0480	1	
(b)	60400	1	

88. 0607_s20_ms_23 Q: 2

Question	Answer	Marks	Partial Marks
	$2\frac{5}{12}$	3	**B2** for equivalent mixed number or improper fraction or **B1** for $4\frac{3}{12}-1\frac{10}{12}$ oe or $\frac{51}{12}-\frac{22}{12}$ oe

89. 0607_s20_ms_23 Q: 7

Question	Answer	Marks	Partial Marks
	60, 36	2	**B1** for each or **M1** for $96 \div (5+3)$

90. 0607_w20_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
	–9	1	

91. 0607_w20_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
	6	1	

92. 0607_w20_ms_21 Q: 5

Question	Answer	Marks	Partial Marks
	45 and 75	2	**M1** for $120 \div 8$ oe soi 15

93. 0607_w20_ms_21 Q: 9

Question	Answer	Marks	Partial Marks
(a)	12.8[0]	2	**M1** for $16 \times \left(\frac{100-20}{100}\right)$ oe
(b)	50	2	**M1** for $40 \times \frac{100}{100-20}$

94. 0607_w20_ms_21 Q: 11

Question	Answer	Marks	Partial Marks
	$[\pm]\frac{1}{8}$	2	**M1** for correct first step e.g. $\frac{1}{4^{\frac{3}{2}}}$ or $\sqrt{4^3}^{-1}$ or **B1** for 2 or 64 seen

95. 0607_w20_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
	$[\pm]\frac{5}{3}$ or $1\frac{2}{3}$ or $1.\dot{6}$	2	**B1** for $\frac{25}{9}$

96. 0607_w20_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
	$\frac{1}{16}$	2	**B1** for 4 seen or reciprocal seen at any stage.

97. 0607_w20_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
(a)	$2^3 \times 3^2 \times 5$ must be in index form	2	**M1** for three steps in a 'factor tree' or 'factor ladder' or **B1** for $2^p \times 3^q \times 5$
(b)	180 or $2^2 \times 3^2 \times 5$	1	
(c)	50 or 2×5^2	1	

98. 0607_w20_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
	0.008	1	

99. 0607_w20_ms_23 Q: 3

Question	Answer	Marks	Partial Marks
	$\frac{8}{9}$	2	**M1** for $\frac{5}{6} \times \frac{16}{15}$ or $\frac{40}{48} \div \frac{45}{48}$ oe

100. 0607_s19_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
(a)	0.09	1	
(b)	$\frac{5}{18}$ or equiv fraction	2	**M1** for $\frac{8}{18}$ or $\frac{3}{18}$ oe

101. 0607_s19_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
	280, 80	2	**B1** for each or **M1** for 360 ÷ (7 + 2) soi by 40

102. 0607_s19_ms_21 Q: 7

Question	Answer	Marks	Partial Marks
	4.96×10^{18}	2	**B1** for 52×10^{17} or 0.24×10^{18} or figs 496

103. 0607_s19_ms_21 Q: 8

Question	Answer	Marks	Partial Marks
(a)	24	1	
(b)	3	2	**B1** for 5^2 soi

104. 0607_s19_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	$\frac{8}{15}$	2	**M1** for $\left[\frac{4}{5}\times\right]\frac{2}{3}$ or for $\frac{8}{10}\div\frac{15}{10}$

105. 0607_s19_ms_22 Q: 10

Question	Answer	Marks	Partial Marks
	3	1	

106. 0607_s19_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
	1.21×10^{30}	2	**B1** for figs 121 seen or for 0.11×10^{30} seen, or for 11×10^{29} seen

107. 0607_s19_ms_22 Q: 14

Question	Answer	Marks	Partial Marks
	$4p^3q^8$	2	**B1** for kp^3q^8 or $4p^kq^8$ or $4p^3q^k$

108. 0607_s19_ms_22 Q: 16

Question	Answer	Marks	Partial Marks
	$\frac{\sqrt{5}+1}{4}$	2	**M1** for $\times\frac{\sqrt{5}+1}{\sqrt{5}+1}$

109. 0607_s19_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
	-8	1	

110. 0607_s19_ms_23 Q: 7

Question	Answer	Marks	Partial Marks
	9	3	**M2** for $\frac{27}{5}\times\frac{5}{3}$ oe or **B1** for $\frac{27}{5}$ or $\frac{5}{3}$

111. 0607_s19_ms_23 Q: 8

Question	Answer	Marks	Partial Marks
(a)	$1.002\times10^{[1]}$	2	**B1** for 10.02
(b)	5×10^{2}	2	**M1** for correct answer not in standard form

112. 0607_s19_ms_23 Q: 11

Question	Answer	Marks	Partial Marks
(a)	250	1	
(b)	96	2	**M1** for $100\times\frac{120}{125}$ oe

113. 0607_s19_ms_23 Q: 15

Question	Answer	Marks	Partial Marks
	8	3	**M1** for correctly finding total time or total distance **M1** for *their* distance/*their* time

114. 0607_w19_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
	43	1	

115. 0607_w19_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
(a)	23	1	
(b)	23 or 29	1	Allow both but no extras

116. 0607_w19_ms_21 Q: 3

Question	Answer	Marks	Partial Marks
	–2, –1, 0, 1	2	**B1** if one error or omission

117. 0607_w19_ms_21 Q: 5

Question	Answer	Marks	Partial Marks
	$\frac{1}{6}$	2	**M1** for $\frac{3}{4}\times\frac{2}{9}$ or $\frac{3}{4}\div\frac{18}{4}$ implied by $\frac{6}{36}$ or $\frac{3}{18}$

118. 0607_w19_ms_21 Q: 8

Question	Answer	Marks	Partial Marks
	16	1	

119. 0607_w19_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
(a)	$7\sqrt{5}$	2	**B1** for $2\sqrt{5}$ or $5\sqrt{5}$
(b)	$3(\sqrt{7}+1)$ or $3\sqrt{7}+3$	2	**M1** for $\times\frac{\sqrt{7}+1}{\sqrt{7}+1}$

120. 0607_w19_ms_21 Q: 15

Question	Answer	Marks	Partial Marks
	t^9	1	

121. 0607_w19_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	49	1	

122. 0607_w19_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
(a)	$2.801[0]\times10^4$	1	
(b)	1.00209×10^{-1}	1	

123. 0607_w19_ms_22 Q: 5

Question	Answer	Marks	Partial Marks
	8	3	**M1** for $\frac{\text{total distance}}{\text{total time}}$ oe **B1** for 2.25 oe seen

124. 0607_w19_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
	0.35	**3**	**M2** for $(4.18-4\times0.52)\div6$ or **M1** for 4×0.52

125. 0607_w19_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
(a)	$7\sqrt{3}$	**2**	**M1** for $10\sqrt{3}$ or $3\sqrt{3}$
(b)	$2(3+\sqrt{2})$ or $6+2\sqrt{2}$	**3**	**M2** for $\frac{14(3+\sqrt{2})}{(3-\sqrt{2})(3+\sqrt{2})}$ or **M1** for $\times\frac{(3+\sqrt{2})}{(3+\sqrt{2})}$

126. 0607_w19_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
(a)	16	**1**	
(b)	[0].09	**1**	

127. 0607_w19_ms_23 Q: 2

Question	Answer	Marks	Partial Marks
(a)	83 or 89	**1**	
(b)	36 or 45	**1**	

128. 0607_w19_ms_23 Q: 4

Question	Answer	Marks	Partial Marks
	12 or $11\frac{2}{3}$	**2**	**M1** for $7\times\frac{5}{3}$ oe

129. 0607_s18_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
(a)	-1	**1**	
(b)	[0].1 or $\frac{1}{10}$	**1**	

130. 0607_s18_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
(a)	$\frac{17}{25}$	1	
(b)	$\frac{27}{56}$	2	**M1** for $\frac{3}{7}\times\frac{9}{8}$ oe

131. 0607_s18_ms_21 Q: 12

Question	Answer	Marks	Partial Marks
(a)	$10\sqrt{7}$	1	
(b)	$\frac{7+\sqrt{2}}{47}$	2	**M1** for $\frac{7+\sqrt{2}}{7+\sqrt{2}}$

132. 0607_s18_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
	61 or 67	1	

133. 0607_s18_ms_22 Q: 6

Question	Answer	Marks	Partial Marks
	$2\times2\times3\times3$ or $2^2\times3^2$	2	**M1** for 2 and 3 as factors

134. 0607_s18_ms_22 Q: 9

Question	Answer	Marks	Partial Marks
	$\frac{41}{15}$ or $2\frac{11}{15}$	3	**M2** for $\frac{66}{15}-\frac{25}{15}$ or $3\frac{6-10}{15}$ oe or **M1** for denominator of $15k$

135. 0607_s18_ms_22 Q: 12

Question	Answer	Marks	Partial Marks
	$6\sqrt{3}$	2	**M1** for $5\sqrt{3}$ or $2\sqrt{3}$ or $3\sqrt{3}$

136. 0607_s18_ms_23 Q: 2

Question	Answer	Marks	Partial Marks
	12	1	

137. 0607_s18_ms_23 Q: 4

Question	Answer	Marks	Partial Marks
	1	**1**	

138. 0607_s18_ms_23 Q: 6

Question	Answer	Marks	Partial Marks
(a)	Any fraction in range	**1**	e.g. $\frac{11}{14}$, $\frac{3}{4}$, $\frac{4}{5}$
(b)	Any irrational number in range	**1**	e.g. $\sqrt{a}$ where $16 <$ (integer a) < 49, 2π $a \neq 25$ or 36

139. 0607_s18_ms_23 Q: 8

Question	Answer	Marks	Partial Marks
	4.82×10^{-7}	**2**	**B1** for figs 482 or 56.7×10^{-8} or 0.78×10^{-7}

140. 0607_s18_ms_23 Q: 9

Question	Answer	Marks	Partial Marks
	3, 15 oe	**2**	**B1** for either or **M1** for $18 \div (1 + 5)$

141. 0607_w18_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
	35	**1**	

142. 0607_w18_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
	$\frac{1}{9}$	**1**	

143. 0607_w18_ms_21 Q: 6

Question	Answer	Marks	Partial Marks
	60	**2**	**M1** for $60n$ or 3 correct multiples of each of 12 and 15 seen or $12 \times 15 \div 3$ or $2 \times 2 \times 3 \times 5$

144. 0607_w18_ms_21 Q: 11

Question	Answer	Marks	Partial Marks
	$3\sqrt{2}$	2	**M1** for $4\sqrt{2}$ or $6\sqrt{2}$ or $5\sqrt{2}$

145. 0607_w18_ms_21 Q: 17

Question	Answer	Marks	Partial Marks
	$\frac{(5+\sqrt{3})^2}{22}$ or $\frac{14+5\sqrt{3}}{11}$ as final answer	3	**M2** for $\frac{(5+\sqrt{3})\times(5+\sqrt{3})}{25+5\sqrt{3}-5\sqrt{3}-(\sqrt{3})^2}$ or **M1** for $\frac{5+\sqrt{3}}{5-\sqrt{3}}\times\frac{5+\sqrt{3}}{5+\sqrt{3}}$

146. 0607_w18_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
(a)	49 100 000	1	
(b)	4.91	1	**FT** *their* **(a)**

147. 0607_w18_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
	$\frac{3}{2}$ or $1\frac{1}{2}$ or 1.5	2	**B1** for $\frac{27}{8}$ seen

148. 0607_w18_ms_23 Q: 5

Question	Answer	Marks	Partial Marks
	$\frac{8}{9}$	2	**M1** for $\frac{5}{6}\times\frac{16}{15}$ oe implied by $\frac{80}{90}$ or better seen

149. 0607_w18_ms_23 Q: 6

Question	Answer	Marks	Partial Marks
(a)	$7\sqrt{2}$	1	
(b)	$\frac{3+\sqrt{5}}{4}$	2	**M1** for $\times\frac{3+\sqrt{5}}{3+\sqrt{5}}$

150. 0607_s17_ms_21 Q: 1

Question	Answer	Marks	Part Marks
	0.36	**1**	

151. 0607_s17_ms_21 Q: 2

Question	Answer	Marks	Part Marks
(a)	$\frac{4}{15}$ cao	**1**	
(b)	$\frac{9}{11}$ oe	**1**	

152. 0607_s17_ms_21 Q: 5

Question	Answer	Marks	Part Marks
	1	**1**	

153. 0607_s17_ms_21 Q: 6

Question	Answer	Marks	Part Marks
	120	**2**	**M1** for $120n$, $n > 1$ or **M1** for 40, 60, 80 and 24, 48, 72 seen or **M1** for $2\times2\times5$ and $2\times2\times2\times3$ soi

154. 0607_s17_ms_21 Q: 13

Question	Answer	Marks	Part Marks
	$6\sqrt{6}+12$ or $6(\sqrt{6}+2)$	**3**	**M2** for $\frac{12(\sqrt{6}+2)}{6-4}$ or better or **M1** for $\frac{\sqrt{6}+2}{\sqrt{6}+2}$ oe seen

155. 0607_s17_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
(a)	5.310	**1**	
(b)	[0].00365	**1**	

156. 0607_s17_ms_23 Q: 1

Question	Answer	Marks	Part Marks
	1.5 oe	**2**	**M1** for $\frac{9}{4}$

157. 0607_s17_ms_23 Q: 2

Question	Answer	Marks	Part Marks
	28	**1**	

158. 0607_s17_ms_23 Q: 3

Question	Answer	Marks	Part Marks
	– 5 and 5	**1**	

159. 0607_s17_ms_23 Q: 6

Question	Answer	Marks	Part Marks
	5×10^{-16}	**2**	**B1** for correct value, not in standard form, seen

160. 0607_s17_ms_23 Q: 12

Question	Answer	Marks	Part Marks
	8	**1**	

161. 0607_s17_ms_23 Q: 13

Question	Answer	Marks	Part Marks
(a)	13	**2**	**M1** for $4^2 - \left(\sqrt{3}\right)^2$ or better or for three of the terms of $16 + 4\sqrt{3} - 4\sqrt{3} - 3$ correct
(b)	$\frac{5\sqrt{7}}{7}$	**1**	

162. 0607_w17_ms_21 Q: 1

Question	Answer	Marks	Partial Marks
	$\frac{200 \times 40}{0.005 + 0.003}$ 1 000 000	**3**	**M1** for for 3 correct approximations **A1** for numerator = 8000 or denominator = 0.008

163. 0607_w17_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
(a)	$2^3 \times 3^{[1]} \times 7^2$ isw	1	
(b)	$2^4 \times 3^2 \times 7^3$ isw	1	
(c)	$2^2 \times 3^{[1]} \times 7^{[1]}$ isw	1	

164. 0607_w17_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
	$\frac{5}{24}$	2	**M1**for $\frac{9}{24} - \frac{4}{24}$ oe

165. 0607_w17_ms_21 Q: 7

Question	Answer	Marks	Partial Marks
	6.23×10^5	2	**B1** for figs 623 or 0.63×10^5 soi or 56×10^4 soi

166. 0607_w17_ms_21 Q: 12

Question	Answer	Marks	Partial Marks
	$6\sqrt{2} - 4$ or $2(3\sqrt{2} - 2)$ final answer	3	**M1** for $\times \frac{3 - \sqrt{2}}{3 - \sqrt{2}}$ **B1** for $(3 + \sqrt{2})(3 - \sqrt{2}) = 7$

167. 0607_w17_ms_22 Q: 3

Question	Answer	Marks	Partial Marks
	6	1	

168. 0607_w17_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
	2.62×10^{21}	2	**M1** for 0.32×10^{21} or 23×10^{20} or figs 262

169. 0607_w17_ms_22 Q: 9

Question	Answer	Marks	Partial Marks
	[0].01 oe	1	

170. 0607_w17_ms_22 Q: 13

Question	Answer	Marks	Partial Marks
(a)	$9\sqrt{2}$	2	**B1** for $3\sqrt{2}$ or $6\sqrt{2}$
(b)	$\sqrt{5}-2$	2	**M1** for $\times\frac{\sqrt{5}-2}{\sqrt{5}-2}$

171. 0607_w17_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
	53	1	

172. 0607_w17_ms_23 Q: 4

Question	Answer	Marks	Partial Marks
	18	2	**M1** for $\frac{144}{8}$ oe

173. 0607_w17_ms_23 Q: 5

Question	Answer	Marks	Partial Marks
	0.35	3	**M2** for $\frac{3.9[0]-4\times0.45}{6}$ or **M1** for $3.9[0]-4\times0.45$

174. 0607_w17_ms_23 Q: 6

Question	Answer	Marks	Partial Marks
(a)	5.8×10^{4}	1	
(b)	8.09×10^{-3}	1	

175. 0607_w17_ms_23 Q: 11

Question	Answer	Marks	Partial Marks
	$8\sqrt{2}$	2	**M1** for $\times\frac{\sqrt{8}}{\sqrt{8}}$ oe