Test exercise F.1

155

Frames

1 Place the appropriate symbol < or > between each of the following pairs of numbers:

(a) -12 -15 (b) 9 -17 (c) -11 10

1 to 4

2 Find the value of each of the following:

(a) $24 - 3 \times 4 + 28 \div 14$ (b) $(24 - 3) \times (4 + 28) \div 14$

5 to 12

3 Write each of the following as a product of prime factors:

(a) 156 (b) 546 (c) 1445 (d) 1485

16 to 19

4 Round each number to the nearest 10, 100 and 1000:

(a) 5045 (b) 1100 (c) -1552 (d) -4995

22 to 24

5 Find (i) the HCF and (ii) the LCM of:

(a) 1274 and 195 (b) 64 and 18

20 to 21

6 Reduce each of the following fractions to their lowest terms:

(a) $\frac{8}{14}$ (b) $\frac{162}{36}$ (c) $-\frac{279}{27}$ (d) $-\frac{81}{3}$

28 to 36

7 Evaluate each of the following, giving your answer as a fraction:

(a) $\frac{1}{3}+\frac{3}{5}$ (b) $\frac{2}{7}-\frac{1}{9}$ (c) $\frac{8}{3}\times\frac{6}{5}$ (d) $\frac{4}{5}$ *of* $\frac{2}{15}$

(e) $\frac{9}{2}\div\frac{3}{2}$ (f) $\frac{6}{7}-\frac{4}{5}\times\frac{3}{2}\div\frac{7}{5}+\frac{9}{4}$

37 to 46

8 In each of the following the proportions of a compound are given. Find the ratios of the components in each case:

(a) $\frac{3}{4}$ of A and $\frac{1}{4}$ of B

(b) $\frac{2}{3}$ of P, $\frac{1}{15}$ of Q and the remainder of R

(c) $\frac{1}{5}$ of R, $\frac{3}{5}$ of S, $\frac{1}{6}$ of T and the remainder of U

47 to 48

9 What is:

(a) $\frac{3}{5}$ as a percentage?

(b) 16% as a fraction in its lowest terms?

(c) 17·5% of £12·50?

49 to 52

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Frames

10 Evaluate each of the following (i) to 4 sig fig and (ii) to 3 dp:

(a) $13{\cdot}6 \times 25{\cdot}8 \div 4{\cdot}2$

(b) $13{\cdot}6 \div 4{\cdot}2 \times 25{\cdot}8$

(c) $9{\cdot}1(17{\cdot}43 + 7{\cdot}2(8{\cdot}6 - 4{\cdot}1^2 \times 3{\cdot}1))$

(d) $-8{\cdot}4((6{\cdot}3 \times 9{\cdot}1 + 2{\cdot}2^{1{\cdot}3}) - (4{\cdot}1^{-3{\cdot}1} \div 3{\cdot}3^3 - 5{\cdot}4))$ **56** to **65**

11 Convert each of the following to decimal form to 3 decimal places:

(a) $\frac{3}{17}$ (b) $-\frac{2}{15}$ (c) $\frac{17}{3}$ (d) $-\frac{24}{11}$ **66** to **67**

12 Write each of the following in abbreviated form:

(a) $6{\cdot}7777\ldots$ (b) $0{\cdot}01001001001\ldots$ **70** to **71**

13 Convert each of the following to fractional form in lowest terms:

(a) $0{\cdot}4$ (b) $3{\cdot}68$ (c) $1{\cdot}\dot{4}$ (d) $-6{\cdot}1$ **68** to **73**

14 Write each of the following as a number raised to a power:

(a) $2^9 \times 2^2$ (b) $6^2 \div 5^2$ (c) $((-4)^4)^{-4}$ (d) $(3^{-5})^0$ **78** to **89**

15 Find the value of each of the following to 3 dp:

(a) $11^{\frac{1}{4}}$ (b) $\sqrt[7]{3}$ (c) $(-81)^{\frac{1}{5}}$ (d) $(-81)^{\frac{1}{4}}$ **90** to **94**

16 Express in standard form:

(a) $537{\cdot}6$ (b) $0{\cdot}364$ (c) 4902 (d) $0{\cdot}000125$ **95** to **101**

17 Convert to preferred standard form:

(a) $6{\cdot}147 \times 10^7$ (b) $2{\cdot}439 \times 10^{-4}$ (c) $5{\cdot}286 \times 10^5$

(d) $4{\cdot}371 \times 10^{-7}$ **102** to **104**

18 Determine the following product, giving the result in both standard form and preferred standard form:

$(6{\cdot}43 \times 10^3)(7{\cdot}35 \times 10^4)$ **95** to **104**

19 Each of the following contains numbers obtained by measurement. Evaluate each to the appropriate level of accuracy:

(a) $18{\cdot}4^{1{\cdot}6} \times 0{\cdot}01$ (b) $\dfrac{7{\cdot}632 \times 2{\cdot}14 - 8{\cdot}32 \div 1{\cdot}1}{16{\cdot}04}$ **105** to **108**

20 Express the following numbers in denary form:

(a) $1111{\cdot}11_2$ (b) $777{\cdot}701_8$ (c) $3\Lambda3{\cdot}9\Lambda1_{12}$

(d) $E02{\cdot}FAB_{16}$ **112** to **129**

21 Convert $19{\cdot}872_{10}$ to the equivalent octal, binary, duodecimal and hexadecimal forms. **130** to **152**