1(a) Express Rs 15471 correct to

1. the nearest thousand rupees, [1]
2. 3 significant figures. [1]

(b) Evaluate , giving your answer correct to 2 significant figures. [2]

(c) The cost of a cup of coffee, Rs *x*, is Rs 50, correct to the nearest Rs 10.

The cost of a gateau, Rs *y*, is Rs 350 correct to the nearest Rs 50.

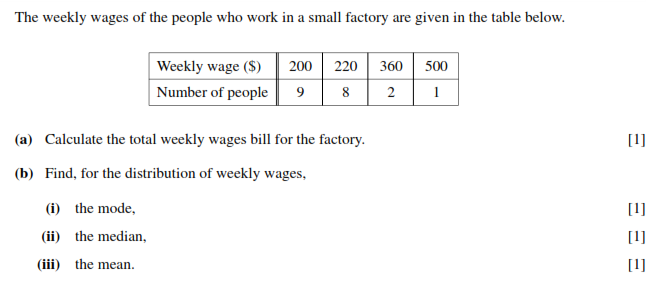
(i) Copy and complete the table below. [4]

|  |  |  |
| --- | --- | --- |
|  | Lower Bound | Upper Bound |
| *x* |  |  |
| *y* |  |  |

(ii) Find the lower bound of the total cost of a gateau and 4 cups of coffee. [2]

2 The weekly wages of the people who work in a small factory are given in the

table below.



(a) Calculate the total weekly wages bill for the factory. [1]

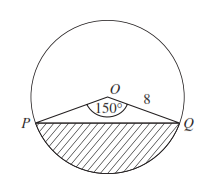
(b) Find, for the distribution of weekly wages,

(i) the mode, [1]

(ii) the median, [1]

(iii) the mean. [1]

3 [The value of is 3.142, correct to 3 decimal places.]



In the diagram, *O* is the centre of a circle of radius 8 cm. *PQ* is a chord and

The minor segment of the circle formed by the chord *PQ* is shaded.

Calculate

(i) the length of the minor arc *PQ*, [4]

(ii) the area of the major sector *OPQ*, [4]

(iii) the shaded area given that the area of triangle *OPQ* is 16 cm2. [2]

4(a) Remove the brackets and simplify

(i) [2]

(ii) . [2]

(b) Factorise completely . [2]

(c) Given that ,

(i) find the value of *y* when , [1]

(ii) find the values of *x* when , [2]

(iii) express *x* in terms of *y*. [2]

(d) Solve the equation [3]

(e) Solve the equation , giving both answers correct to 2 decimal places.[4]

(f) Simplify the expression . [4]

5(a) Two varieties of tea, ‘High Blend’ and ‘Normal Blend’, are made by mixing

Grade *A* leaves and Grade *B* leaves.

(i) In High Blend, the ratio of the masses of Grade *A* leaves to Grade *B* leaves

is 3 : 2.

Find the mass of Grade *A* leaves used in making 250 *g* of High Blend. [1]

(ii) 1 *kg* of Normal Blend is made by using 450 *g* of Grade *A* leaves.

Find, **in its simplest form**, the ratio of the masses of Grade *A* to Grade *B*

leaves in Normal Blend.

Give your answer in the form *m* : *n*, where *m* and *n* are integers. [2]

(iii) 250 *g* of High Blend is mixed with 1 *kg* of Normal Blend.

Calculate the percentage of the mass of this mixture that consists of Grade

A leaves. [2]

(b) During a sale, a shop sold packets of tea for 20% less than the price shown on

their labels.

Elizabeth and Peter each bought a packet of tea in the sale.

(i) Elizabeth’s packet had a label price of $4.50.

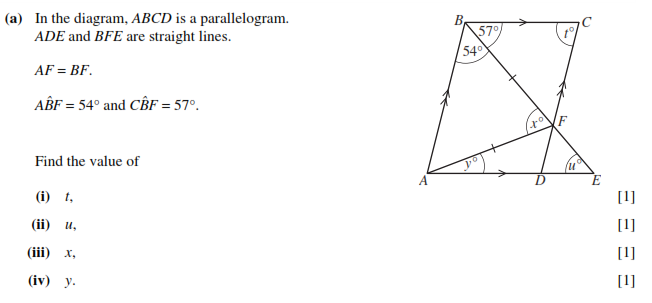
How much did she pay? [1]

(ii) Peter paid $6.20 for his packet.

Calculate the price shown on its label. [2]

6 In the diagram, *ABCD* is a parallelogram. *ADE* and *BFE* are straight lines. *AF=BF*,

and .



Find the value of

(i) *t*, [1]

(ii) *u*, [1]

(iii) *x*, [1]

(iv) y. [1]

7(a) **A** = and **B** = .

(i)Express 2**A** − 3**B** in terms of *x*. [2]

(ii)Given that **A** = **B**-1, find the value of *x*. [2]

(b) The matrix **M** satisfies the equation 8 + 5**M** = **M**.

Find **M**. [2]

(c) Given that , find the value of *x.* [2]

(d) Find the matrix **X** such that **XA** = and given **A** = [4]

8

(a)Find, in terms of *x*, an expression for

(i)*AB*, [1]

(ii)*PQ*. [1]

(b)Given that *AB* is 3 cm greater than *PQ*, form an equation in *x* and show that it

simplifies to

3*x*2 + 15*x* – 65 = 0. [3]

(c)Solve the equation 3*x*2 + 15*x* – 65 = 0, giving each answer correct to 2 decimal

places. [4]

(d) (i)Show that the perimeter of *ABCD* is 14.9 cm, correct to 3 significant figures.[1]

(ii)Find the difference between the perimeters of the two rectangles. [2]

9(a) Given that *x* = 2.5 × 103 and *y* = 4.0 × 104.

Find the value of the following giving your answer in standard form.

1. ** [1]
2. [1]
3. [2]
4. *y* – *x* [2]

(b) Solve (4.8 × 10-3) – 2*x* = (2.7 × 10-4) giving your answer in standard form. [3]

10(a) A function is defined by .

(i)Find *f* (7). [1]

(ii)Given that *f* (*t*) = *t*, find *t*. [2]

(iii)Find *f* –1(*x*). [2]

(b) A function is defined by . Given that and .

Find the value of *a* and of *b*. [4]