**Skill Sheet: Cost**

***What You Need to Know:***

There are several types of questions that can be asked about the cost to make a product:

* The total cost of the parts needed:

total cost of parts = £ part1 + £ part2 + £ part3 etc.

* The cost of materials needed:

cost of material = mass of material x cost per unit mass

**or** cost of material = area of material x cost per unit area

* The cost of labour to machine or assemble the product:

labour cost = labour time x charge rate

* The total cost to manufacture a product:

total cost = cost of parts + cost of materials + labour cost

Instead of the cost in pounds, you could be asked for a percentage. For example, what percentage the cost of materials is of the total cost to make a product.

***Example:***

A child’s toy car is made from:

***Examiners***

***Top Tip***

*You can get marks for showing your method and working out even if the answer is wrong*

* 4 wheels, each costing £0.07
* 2 axles, costing £0.05 each
* A body made from 150 grams of polymer granules.

The polymer granules cost £6 kg-1. Calculate the total cost of materials in the toy.

***Answer:***

Cost of the body = 0.15 x 6 = £0.90

Total cost of the materials = (4 x 0.07) + (2 x 0.05) + 0.90 = £1.28

***Now Try These:***

1. A barbell uses 2.5 kg of cast iron, which costs £1.54 kg-1.

Calculate the cost of the cast iron in one barbell.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. A material costs £12 per square meter. Calculate the cost of a rectangular piece that is 45 cm x 30 cm.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice Sheet: Cost**

***Now Try These:***

1. A polymer costs £82 per kg. A product contains 25 g of polymer.

Calculate the cost of the polymer used in the product.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The total time needed to manufacture a product is 35 minutes. The cost of labour cost is £45 hour-1.

Calculate the cost of labour to manufacture the product.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The cost of the parts used to make a product is shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Part: | Cost each, £: | Quantity needed per product: | Total cost per product, £ |
| Body | 1.32 | 1 |  |
| Cover | 0.46 | 1 |  |
| Washers | 0.02 | 4 |  |
| Machine screws | 0.04 | 4 |  |
| Lever | 0.16 | 2 |  |
|  |  | Total: |  |

1. Complete the ‘total cost per product’ column of the table.
2. The costs involved in making one product other than materials are £3.66.

Calculate the percentage of the cost of each product that is materials.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Answers:**

**Skill Sheet: Cost**

1. Cost = mass x unit cost = 2.5 x 1.54 = £3.85
2. Area = 0.45 x 0.3 = 0.135 m

Cost = area x unit cost = 0.135 x 12 = £1.62

**Practice Sheet: Cost**

1. Cost = 25 / 1000 x 82 = £2.05
2. Labour cost = (35/60) x 45 = £26.25
3. a)

|  |  |  |  |
| --- | --- | --- | --- |
| Part: | Cost each, £: | Quantity needed per product: | Total cost per product, £ |
| Body | 1.32 | 1 | 1.32 |
| Cover | 0.46 | 1 | 0.46 |
| Washers | 0.02 | 4 | 0.08 |
| Machine screws | 0.04 | 4 | 0.16 |
| Lever | 0.16 | 2 | 0.32 |
|  |  | Total: | 2.34 |

b) Total cost per product = 2.34 + 3.66 = £6.00

% Materials = 2.34/6.00 x 100/1 = 39 %