Practice Question #1

An upcoming job takes 13 workweek days to finish. There are 6.5 hours per day that will be billable for every work day. Typically the contractor performing this job will add 40% profit on top of the labour costs. 8 workers will be required for the job and are paid $21 per hour with an overhead ratio of 1.1 and an overtime percentage rate of 35 percent. A personal time allowance percentage of 11% will be used for the fully loaded labour rate and the quote. On average, workers are making 4 cell calls per day. What is the cost of the fully loaded labour rate for the job?

Answer:

This question has a fair amount of information (more than we need), but the question is only asking for the labour rate. There are only 3 things in a labour rate, the base rate, overhead, and maybe a personal time factor.

We have a base rate of $21/hr, and overhead ratio of 1.1 (could also be called an overhead factor of 1.2, or could be called 10% overhead, and our PTF is 11% (or 1.11).

So $21/hr X 1.1 X 1.11 = $25.64/hr

Practice Question #2

An upcoming job takes 9 workweek days to finish. There are 7.5 hours per day on average that will be billable for each work day on this particular project. Typically the contractor performing this job will add 21% profit on top of the labour costs. 7 workers will be required for the job and are paid $28 per hour. The overhead charge percentage is 48%, and an overtime percentage rate of 34 percent. The contractor uses a project average of 8 work hours per day to determine the personal time factor. A worker takes two 17 minute work breaks, and another 36 minutes for: washroom breaks, phone calls/emails (not related to the project). The 8 hour day is 8AM to noon, and 1 to 5PM, it is assumed the worker will be out for lunch for an hour. On average, workers are making 5 cell calls per day. What is the cost of the fully loaded labour rate for the job?

Answer:

This question has a fair amount of information (more than we need), and you have to read the question carefully, but the question is only asking for the fully loaded labour rate. There are only 3 things in a fully loaded labour rate, the base rate, overhead, and sometimes a personal time factor (PTF).

We have a base rate of $28/hr, and overhead of 48% (an overhead factor of 1.48), but we need to calculate the PTF. We are told to use 8 hours a day to help determine the PTF, and we can verify this from the work day times of 8AM to 5PM less an hour for lunch, i.e. 9 hours less an hour for lunch is 8 work hours. But out of these 8 hours we have personal time including: Two 17 minute breaks, 2 \* 17 = 34 minutes

Washroom breaks, and phone calls/email not related to the project = 36 minutes

Total of the 2 lines above is 70 minutes, converting to hours 70 minutes/60 minutes per hour = 1.1667 hours

So only 8 hours -1.1667 hours = 6.8333 hours are actually being spent on the project out of an 8 hour work day. Our PTF is then 8/6.8333 = 1.1707. Our full loaded labour rate is: labour rate \* Overhead Factor \* PTF = $28/hr \* 1.48\* 1.1707 = 48.514, which is close enough to the answer.

Note: although it might have been tempting to use 7.5 hours per day in our PTF calculations, we were told the "contractor uses a project average of 8 hours a day to determine the personal time factor", so we use 8 hours. The 7.5 hours was a figure specific to this particular project situation and would not be used to calculate the PTF.

﻿

Practice Question #3

What is the quote for a job that takes 9 work weeks to finish? Note, this is a labour only job and typically the contractor performing this job will add 25% profit on top of the labour costs. 7 workers will be required for the job and are paid $22 per hour with an overhead ratio of 1.7 and an overtime percentage rate of 33 percent. There are 7.5 hours per day that will be billable for each work day on this particular project. And a personal time allowance percentage of 17% will be used for the fully loaded labour rate and the quote. On average, workers are making 8 cell calls per day. The job is being done for a friend so the contractor has decided to not add profit to the quote.

➡ 103378

Answer:

This question does require you to pay attention to the details of the scenario. For example, the profit rate is mentioned, but it's pointed out profit won't be applied to this quote. Overtime is mentioned, but is it needed? The number of calls workers are making are mentioned, is it relevant to the question?

For our quote, we need a fully loaded labour rate, and then the number of hours required in the project. The labour rate is $22/hr with a 1.7 Overhead, and a 17% PTF. $22/hr X 1.7 X 1.17 = $43.758/hr. Note 5 significant figures are used for this exercise to maintain answer accuracy.

We need hours in the project, we are told the project is work weeks, which means Monday to Friday. So 9 weeks X 5 days/week = 45 days. We have 7 workers billable 7.5 hour per day. 45 days X 7.5 hours/day X 7 workers = 2,362.5 worker hours.

2,362.5 hours X $43.758/hour = $103,378.27

﻿

Practice Question #4

. This is a time and material project quote, hourly rate of a worker is $16/hr

. The overhead charge percentage is 44%, or we increase the worker's rate for costing, the overhead factor = 1+ 44/100

. During an 8 hour day, the worker takes two 17 minute work breaks, and another 25 minutes for: washroom breaks, phone calls/emails (not related to the project). The

contractor uses a project average of 8 work hours per day to determine the personal time factor, based on 8AM to noon, and 1 to 5PM, and it is assumed the worker will be out for lunch for an hour.

. The job requires the worker to be assigned to the job for 4 weeks (5 business days per week) to get the job done.

. On this particular job the contractor (supplier) believes they will be billing the customer on average 7.3 hours per day per worker.

. The customer wants the worker to record only the actual hours they spend working on the customer's project (not washroom breaks, personal calls), and they will only pay for those hours

. A total of 5 workers are required for the project.

• The supplier is going to add another 28% on top of all of the numbers above to create the quote (the proposal with pricing for the customer), because profit is not included in their overhead factor.

. What is the amount of the quote from the supplier?

24546

This question is an example of the need to really understand the scenario in order to provide the answer. It requires the use of a Personal Time Factor, but it is not provided. The questions points out they won't pay for time not actually spent on the project, see - "the customer .... will only pay for those hours". But we are also given details to calculate the PTF. Should we include the hour workers take for lunch in our PTF. We are told the contractor uses 8 hours a day to determine the personal time factor. This is vague but we are also told a worker works 8 to 12, and 1 to 5 with an hour for lunch. That's 4 hours of work in the morning and 4 in the afternoon, which makes up the 8 hour day. And we're told "During an 8 hour day, the worker takes two 17 minute work breaks....." which verifies we'll use 8 hours for the work day without personal time items, but lunch will NOT be a personal time item.

So the personal time is 2 X 17 min +25 min = 59 min. Or 59 min divided by 60min/hr = 0.98333

8 hours less 0.98333 = 7.0166 hours From our formula to derive the PTF, 8 hours divided by 7.0166 hours = 1.1401 So our labour rate is $16/hr X 1.44 for overhead X 1.1401 PTF = $26.268/hr

How many hours in the project? 4 wks X 5 days/wk X 7.3 hrs/day X 5 workers = 730 worker hours. So 730 hours X $26.268/hour = $19,175.64. But for the quote, we need to include profit which is 28%. So $19,175.64 X 1.28 = $24,544.82.

Practice Question #5

You are asked what the Unit Cost is for desks you need for a commercial renovation. You have already ordered 49 desks at a cost of $660 per desk and the cost to ship the desks was $3150. You then found out that you needed 6 more desks. When you went to order more desks there was a special sale based on a minimum quantity of 17. Because the special price was so good, you and your manager decided to order the minimum quantity as any extra desks would be required in the next few months. The cost for all 17 desks for the minimum quantity special price was $9950 and the cost to ship this special price order was $550. All the desks for the renovation will require a special high security add-on kit to lock one of the drawers which is being bought from the another company for $84 per desk (no shipping costs). These security kits should be included in the Unit Cost per desk which would be...

➡780.82

This question is asking for a unit cost across 2 separate purchases. We could figure out a unit cost for the first order and then the second order, but we would have to do a weighted average of the 2 unit costs, we couldn't add the 2 unit costs and divide by 2 (the orders are different sizes). It might be easier to add up all the costs (excluding the security add-on kit which is already per unit for all desks) and then divide by the total units we bought.

First order was 49 desks at $660 per desk, plus $3150 for shipping. 49 desks X $660/desk + $3150 = $35490. The second order was $9950 plus $550 for shipping, $9950 + $550 = $10500. The total product and shipping cost was $35490 + $10500 = $45990. We ordered 49 desks + 17 desks = 66 desks. So our unit cost is $ 45990 divided 66 units = $696.82 per desk.

But we have to add on the security kit, which is already "per unit". $696.82/desk + $84/desk = $780.82 per desk.

﻿

Practice Question for Scope 6056. How many WBS elements (boxes) would be called "deliverables" in this phased project? A hierarchical phased WBS has 4 phases in the level immediately below the project level. The WBS has a numbering system that starts with a 1.0 for the project level with the phases below the project level starting at 1.1. Each phase has 2 minor deliverables and each minor deliverable has the identical number of work packages. All the work packages have the same WBS code format, they all go up to 1.X.X.8.

➡77

This question requires you to understand the WBS code format (1.1.1.1) and be able to draw or imagine what the hierarchy would look like. Draw a diagram to follow this answer.

The question is asking for deliverables and there isn't any information provided on activities. So we are told there is a project level deliverable with 4 phases, and each phase is the same in that they all have 2 minor deliverables, with the same number of work packages. How many work packages are there in each minor deliverable? We are told the WBS for the WP's goes up to 1.X.X.8. We know the project deliverable is 1.0, so the first X must be the phase, and then the second X must be the minor deliverable, which leaves 8 for the WP's. There are 8 WP's in each minor deliverable, and 2 minor deliverables in each Phase. So each Phase has 2 X 8 WP's.

We can now total all the deliverables, we'll start from the bottom and work up:

16 WPs per phase = 16 X 4 = 64.

2 minor deliverables per phase, 2 X 4 =8

4 phases in the total project, so 4

And 1 project level deliverable, so 1

The total is 77 deliverables.

Again, it's easy to see if you draw a diagram, and apply the WBS down to at least one WP.