Similar to Exam Type Questions 2

1. Oak is priced at €550 per cubic metre. Calculate the cost of each of the three oak planks that are specified in the table below.

	Material	Length	Width	Thickness
A)	Oak	3.6m	225mm	30mm
B)	Oak	4.2m	175mm	44mm
C)	Oak	2.8m	130mm	65mm

2. Calculate the compound interest on €1800 for 4 years at 7% per annum.
3. Calculate the number of risers and treads needed for a private stairs with a total rise of 2750mm and total going of 3600mm.
4. The stair formula of 2R + G = 550mm to 700mm. select a suitable rise for a going of 220mm to conform to the formula.
5. Eight circular tops 590mm diameter are cut from a sheet 2.440m x 1.220m. Calculate the percentage waste to the nearest whole number. (Area of circle = 3.14 x R^2)
6. Softwood costs €360 per m^3 plus VAT at 23%. Calculate the total value of the following list allowing 5% for cutting and waste.

Quantity	Length	Width	Thickness	Volume
20	3500mm	225mm	50mm	
5	5000mm	150mm	35mm	
12	2400mm	100mm	25mm	

7. €12,000 was invested at compound interest for 3 years.
   The first year rate was 7%.
   The second year rate was 9%.
   The third year rate was 6%.
   Calculate the final amount and the interest earned.
8. Nine circular tops 400mm diameter are cut from a sheet 1.220m x 1.220m. Calculate the percentage waste to the nearest whole number. (Area of circle = 3.14 x R^2)
9. Eight half round tops 750mm diameter are cut from a sheet 2.440m x 1.220m. Calculate the percentage waste to the nearest whole number. (Area of circle = 3.14 x R^2)
10. A contractor estimates that for every €2.75 that is spent on material, the labour costs are €4.50 and the overhead costs are €1.00. Calculate the overhead cost on a job where the total cost is €26,400.
11. €3,800 was invested at compound interest for 3 years.
    The first year rate was 2.5%.
    The second year rate was 3%.
    The third year rate was 3.5%.
    Calculate the final amount and the interest earned.
12. Select a suitable rise and going for a private stairs with a total rise of 2520mm.
    (show proof it complies with regulations)

Similar to Exam Type Questions 2

1. Oak is priced at €550 per cubic metre. Calculate the cost of each of the three oak planks that are specified in the table below.

	Material	Length	Width	Thickness	Volume	Cost	Price
A)	Oak	3.6m	225mm	30mm	0.0243	550	**€ 13.37**
B)	Oak	4.2m	175mm	44mm	0.03234	550	**€ 17.79**
C)	Oak	2.8m	130mm	65mm	0.02366	550	**€ 13.01**

2. Calculate the compound interest on €1800 for 4 years at 7% per annum.

   €1800 * 1.07 = €1,926
   €1926 * 1.07 = €2,060.82
   €2060.82 * 1.07 = €2,205.08
   €2205.08 * 1.07 = €2,359.43 => Total Compound interest = **€ 559.43**

3. Calculate the number of risers and treads needed for a private stairs with a total rise of 2750mm and total going of 3600mm.

   2750/16 = 171.875 2750/15 = 183.33 2750/14 = 196.43 2750/13=211.538 2750/12 = ~~229.166~~
   (Possible to use 16, 15, 14 or 13 risers <u>but must prove answer</u>)

   <u>Example:</u> 15 risers @ 183.33 will need 14 treads @ 257.14 *{3600/14}*

   Proof 1 ; *2 R + G = 550 – 700* *2(183.33) + 257.14 =* ***623.8***
   Proof 2; *Tan A = <u>183.33</u> = 0.71296* *Tan^{-1} 0.71296 =* ***35.487°***
   257.14

4. The stair formula of 2R + G = 550mm to 700mm. select a suitable rise for a going of 220mm to conform to the formula.

   2 R + G = 550 – 700
   => 2(R) = {550-220} – {700-220}
   2(R) = 330 – 480
   Rise = 115mm – 240mm

   However Max rise is 220mm and this can't be used with a going of 220mm so need to check against max pitch:
   *Tan 42° = <u>max rise</u> => 220 * Tan 42° =* ***max rise***
   *220 220 * 0.9004 = 198.08*
   => Acceptable Rise = 115mm – 198mm

5. Eight circular tops 590mm diameter are cut from a sheet 2.440m x 1.220m. Calculate the percentage waste to the nearest whole number. (Area of circle = 3.14 x R^2)

   Area of Sheet = 2.44 * 1.22 = 2.9768
   Area Required = 8 * 3.14 * 0.295^2 = 2.186068
   => Area of waste = 0.79012m so <u>0.79012</u> * 100 = **26.54%**
   2.9768

6. Softwood costs €360 per m^3 plus VAT at 23%. Calculate the total value of the following list allowing 5% for cutting and waste.

Quantity	Length	Width	Thickness	Volume
20	3500mm	225mm	50mm	0.7875m
5	5000mm	150mm	35mm	0.13125m
12	2400mm	100mm	25mm	0.072m

Total Volume = 0.99075m^3

0.99075 * 1.05 *(Cutting and waste)* = 1.0403m^3 * € 360 *(Cost)* = € 374.50
Plus VAT @ 23% <u>* 1.23</u>
€ 460.64

Similar to Exam Type Questions 2

7. €12,000 was invested at compound interest for 3 years.
   The first year rate was 7%; The second year rate was 9%; The third year rate was 6%.
   Calculate the final amount and the interest earned.

   €12000 * 1.07 = € 12,840

   €12840 * 1.09 = € 13,995.60

   €13995.60 * 1.06 = **€14,835.34** (Final Amount)

   ⇨ Total Interest Earned = **€2,835.34**

8. Nine circular tops 400mm diameter are cut from a sheet 1.220m x 1.220m. Calculate the percentage waste to the nearest whole number. (Area of circle = 3.14 x R^2)

   Area of Sheet = 1.22 * 1.22 = 1.4884 Area Required = 9* 3.14 * 0.2^2 = 1.1304

   => Area of waste = 0.358m so $\frac{0.358}{1.4884} * 100$ = **24.05%**

9. Eight half round tops 750mm diameter are cut from a sheet 2.440m x 1.220m. Calculate the percentage waste to the nearest whole number. (Area of circle = 3.14 x R^2)

   Area of Sheet = 2.44 * 1.22 = 2.9768 Area Required = 8 * 0.5 * 3.14 * 0.375^2 = 1.76625

   => Area of waste = 1.21055m so $\frac{1.21055}{2.9768} * 100$ = **40.67%**

10. A contractor estimates that for every €2.75 that is spent on material, the labour costs are €4.50 and the overhead costs are €1.00. Calculate the overhead cost on a job where the total cost is €26,400.

    €2.75 : € 4.50 : €1.00 = 825 parts, so one part is €32 *(€26,400 / 825)*

    => (275*€32) : (450*€32) : (100*€32) **= €8,800 : €14,400 : €3,200**

11. €3800 was invested at compound interest for 3 years.
    The first year rate was 2.5%; The second year rate was 3%; The third year rate was 3.5%.
    Calculate the final amount and the interest earned.

    €3800 * 1.025 = € 3,895

    €3895 * 1.03 = € 4,011.85

    €4011.85 * 1.035 = **€4,152.26** (Final Amount)

    ⇨ Total Interest Earned = **€352.26**

12. Select a suitable going to comply with the 2R + G formula of a private stairs with a total rise of 2520mm. (show proof it complies with regulations)

    2520/16 = 157.5 *(Possible to use 16, 15, 14, 13 or 12 risers <u>but must prove answer</u>)*
    2520/15 = 168
    2520/14 = 180 *<u>Example</u>: 14 risers @ 180 will need 13 treads*
    2520/13 =193.846 *(need to choose going so at a guess optimum 250mm)*
    2520/12 = 210
    2520/11 = ~~229.090~~

    Proof 1 ; *2 R + G = 550 – 700* *2(180) + 250 = **610***

    Proof 2; *Tan A = $\frac{180}{250}$ = 0.72* *Tan^{-1} 0.72 = **35.754°***