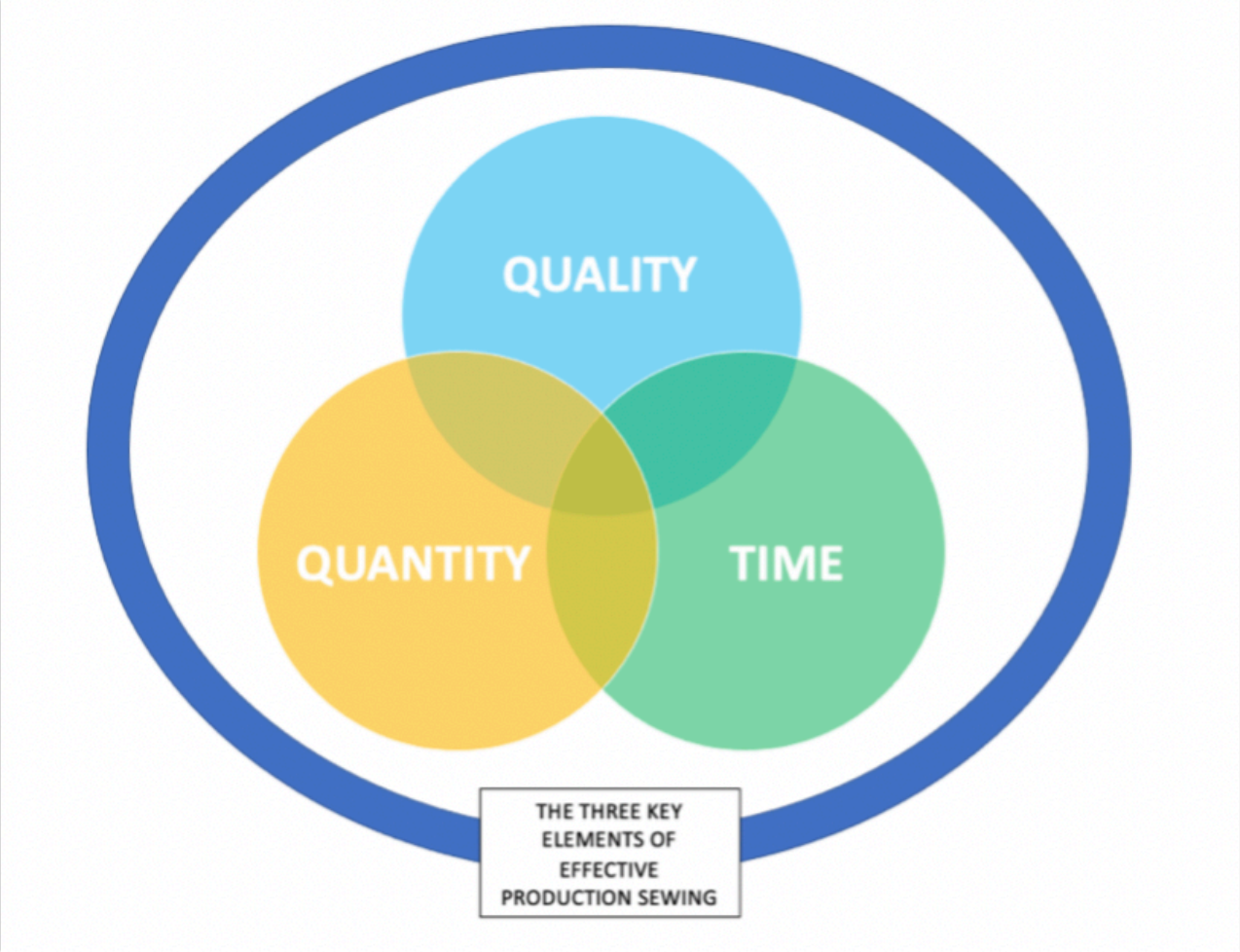


Lesson 5.2 Quantity Requirements

Alongside quality standards, a production sewing machinist must also meet quantity requirements within given time scales. Quality, quantity, and time are the three key elements of effective production sewing. This means to be an efficient production sewing machinist you need to be able to complete jobs in the required time and to the acceptable quality level.

This keeps costs balanced. If a product takes longer to make than planned, if it does not meet quality standards or if completion misses the deadline date further costs are incurred, and customers will not pay more than the price quoted this means a loss to the business.

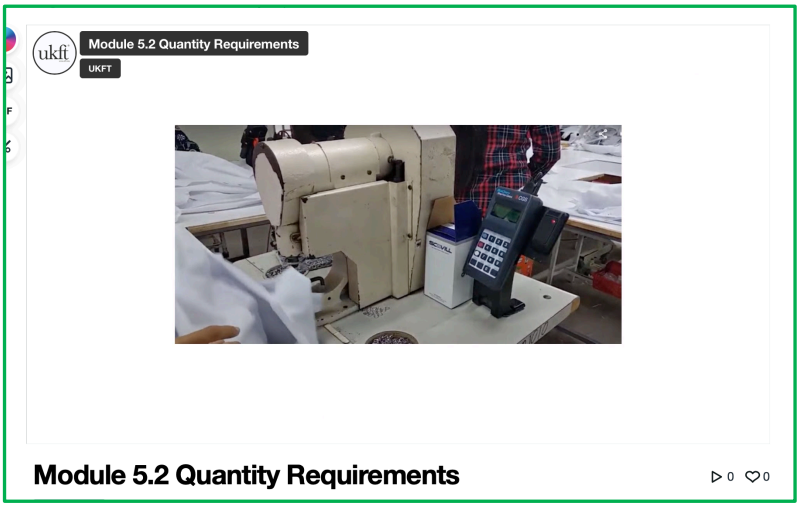
That is why it is important to get it right first time in the shortest possible time

The number of jobs you are expected to carry out during your working day will be determined by the production manager or supervisor. Depending on your companies' size and production management processes the way quantity requirements are set and communicated may be different.

Larger companies tend to complete studies on individual operations and allocate timings for each job. These timings are communicated via communication systems and tell you how long the operation should take. Timings also help the company to plan production and set realistic production targets.

Smaller companies may not have formal production systems or timings in place, but deadlines still must be met and are communicated via written or verbal instructions. In both cases you will be expected to carry out operations quickly, efficiently and to quality standards.

Watch the video **5.2 Quantity Requirements** for an introduction to quantity requirements. We recommend that you watch this video right through before starting the lesson. Then refer to it as you progress (reference points are highlighted in each section)



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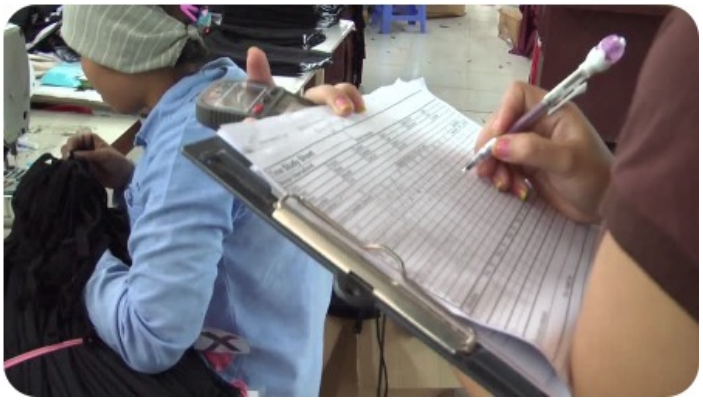

Timings

Some companies study the method and time for each operation. This means they know how much time to allocate to each job, others may judge the time required using their experience.

Whichever process they use the result inform production planning, targets, deadlines, performance rates costs and the final price along with material costs and overheads.

Timings are usually communicated, along with the quality requirements on a specification sheet or Standards Operating Procedure (SOP) or it could be via dockets or verbal instruction.

Please watch the video **5.2 Quantity Requirements 01.39 – 03.50** for information on timings, how timings are taken and recorded and why they are important.

Module 5.2 Quantity Requirements

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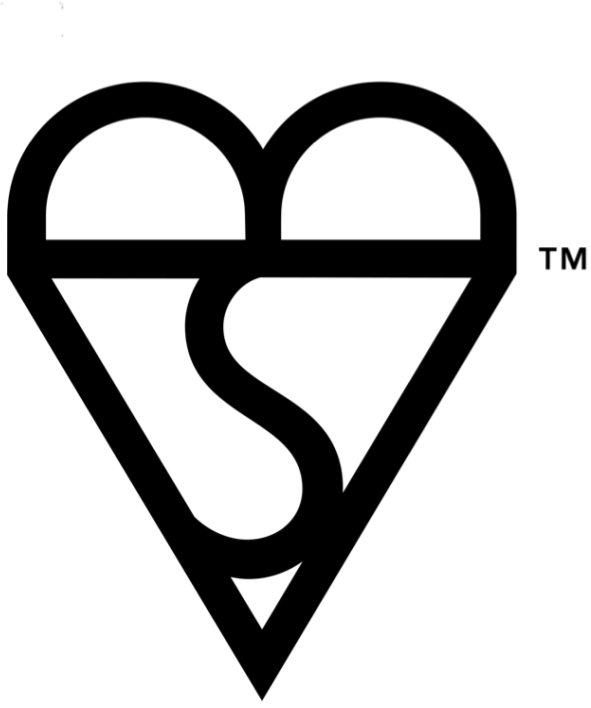
Performance Rates

The speed a production sewing machinist works is often referred to as 'Performance'. Many companies assess performance regularly to identify performance levels and areas that may need improvement. Your progress in meeting the required speed and quality level is called your performance rate.

To ensure the correct performance rate is allocated, production sewing machinists must record and communicate completed work. This is done via different systems used across the industry

Watch the video 03.50 to 06.04 for more detail on performance rates and the systems used across the industry to record completed work. Also see Section 5.4 Work Documentation.



Performance Rating

"Rating" is an assessment of the pace at which a worker can perform an operation. Rating considers many factors such as the complexity of the job, the method used and the sequence of carrying out the work. The purpose of rating is to come up with a 'standard rate' for the job. The standard rate is the pace a motivated, qualified worker can do the without strain. The British Standard rating scale gives a number value for various rates as follows:

- 0 no activity
- 50 very slow performance
- 75 slow performances (break-even point)
- 100 standard acceptable rate of performance
- 115 very fast
- 150 exceptionally fast

A standard performance rate is measured by the amount of work which a qualified worker achieves without over exertion across the working day, provided they are motivated, they know the method and do not encounter problems.

The standard performance rate is known as 100%. Therefore, A low performance rate, which produces fewer pieces per hour, is recorded as below 100% and a high- performance rate that produces more pieces per hour is over 100%.

It is important to note that British standard 75 is the break-even point. This means that anyone working at this rate is covering costs, meaning there is no loss or gain for the business.

Have look at how production rating is applied to cushion cover production. See the example below:

PRODUCT: CUSHION COVER

TARGET: 4 COVERS PER HOUR = 100% PERFORMANCE

Machinist 1	Machinist 2	Machinist 3	Machinist 4	Machinist 5
Produces one cushion cover per hour	Produces two cushion cover per hour	Produces three cushion cover per hour	Produces four cushion cover per hour	Produces five cushion cover per hour
25% PERFORMANCE Extremely slow	50% PERFORMANCE Very slow	75% PERFORMANCE Slow	100% PERFORMANCE Standard speed	125% PERFORMANCE Fast

So why is each machinist working at a different performance rate?

There could be many reasons such as untrained, unskilled, unexperienced, poorly cut work, incorrect machine, incorrect machine settings, over tired, not focused. Let's look at the characteristics of a low, normal, and high performing production sewing machinist.

Characteristics of a low, normal, and high performing production sewing machinist: This is a study of how machinists work, analysing movement, attitude, and confidence levels. The different characteristics of a low, normal, and high performers are detailed as follows:

Low Performer - working at a rate lower than 100%

- Unprepared
- Dithering/Fumbling
- False start
- Hesitation /Unsure Untrained
- Unmotivated
- Slow actions
- No rhythm
- Uncoordinated
- Unnecessary movements
- Wasted actions

Standard Performer – working at 100%

- Prepared
- Fluid motions
- Confident
- Consistent
- Conscientious
- Organised Motivated
- Steady focus
- Coordinated rhythm
- Necessary movement only, No wasted actions

High Performer – working over 100%

- Prepared Fluid motions
- Confident, Enthusiastic
- Consistent
- Coordinated
- Competitive
- Conscientious
- Fast rhythm
- Well organised
- Focused, Motivated
- Necessary movement only, No wasted actions

It is important to note that the standard performance rate (100%~) is the rate which you should aim to achieve. This eliminates over exertion across the working day, allowing consistent production. The higher rate is often achieved only in short bursts and is difficult to sustain.

Skills Challenge 5.7

1. Why must products be made to an acceptable quality standard in the minimum amount of time?

   - To ensure deadlines are met
   - To keep costs balanced and ensure the product does not cost more to make than it is sold for
   - To make as many products as possible across the working day

2. Mary is working at 50% performance and is making 40 products per day. How many products does she need to make to achieve 100% performance?

   - 80 products
   - 100 products
   - 70 products

3. Imagine you are making simple tee-shirts. To achieve 100% performance, you need to make four tee shirt per hour. You are making three per hour. What performance rate are you working at?

   - 50%
   - 75%
   - 100%

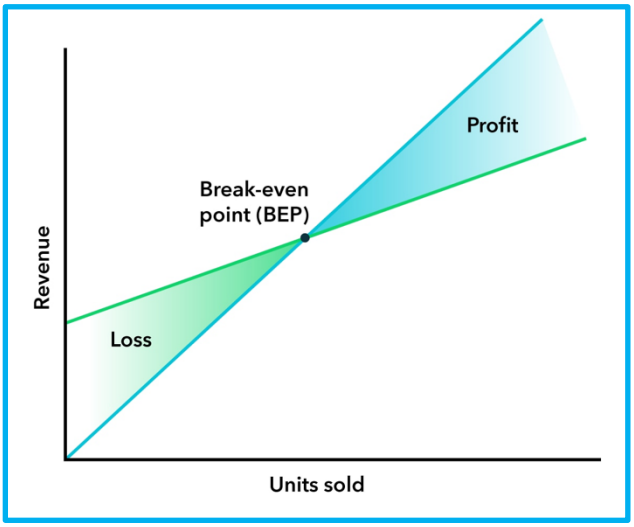
4. From the list below highlight four likely characteristics of a sewing machinist who is working at a low level of performance

   - Unprepared
   - Prepared
   - Unenthusiastic

- Competitive
- Untrained
- Not Confident

5. From the list below highlight four likely characteristics of a sewing machinist who is working at a high level of performance

- Not confident
- Unorganised
- Enthusiastic
- Confident
- Not trained properly
- Not confident
- Organised
- Well trained



Performance and costs

The performance rate also influences production costs. The standard performance rate (100%) represents the point where your work covers your wages, the companies' overheads and generates a profit working below this rate costs your company money.

When training as a production machinist, your first target is the 'break-even point' (Usually 75%) **This is the point when your work is at the right quality standard and covers your wages and company overheads but does not**

generate profit. Once you achieve this you can build on your success by aiming for the standard performance rate (100%). It is important to understand that how performance rates effect production costs which in turn effect the final price point. See the simplified example below:

PRODUCT: Cushion Cover **WAGES:** £10.00 per hour

OVERHEADS: Fabric, trim, packing etc. £1.00 per cushion cover. Heating, lighting, rent, rates etc. £1.00 per cushion cover

PRICE POINT: £12.00 per cushion cover

Machinist 1	Machinist 2	Machinist 3
Produces **one** cushion cover every hour	Produces **two** cushion every hour	Produces **three** cushion covers every hour
Wages: £10.00	Wages: £10.00	Wages: £10.00
Overheads: £2.00	Overheads: £4.00	Overheads: £6.00
Production cost per cover: £12.00	Production cost per cover: £7.00	Production cost per cover: £5.33
Price point: £12.00	Price point: £12.00	Price point: £12.00
Loss: £0 Profit £0	Loss: £0 Profit: £5.00	Loss: £0 Profit: £6.89

The above table demonstrates why it is important to achieve standard performance rates as quickly as possible. Profit equals a company's revenue minus expenses. Earning a profit is important to all businesses and they are usually ploughed back into the company to ensure future growth and security for the business and its staff. Companies cannot remain in business without turning a profit.

Knowledge Challenge 5.8

1. What does the term 'break-even point' mean?

    - The point when your work is at the right quality standard and covers your wages and company overheads but does not generate profit.
    - The point when your work is at the right quality standard but not made fast enough to cover costs.

- The point when your work output covers your wages but not company overheads.

2. If you are working at 100% performance, you are producing enough products to…

   - cover your companies' fixed overheads (rent, heating bills etc)
   - cover your wages, the companies' overheads and generate a profit
   - cover half of your wages and your holiday pay

3. Check out the table below and answer the following questions.

Machinist 1	Machinist 2	Machinist 3
Produces **one** cushion cover every hour	Produces **two** cushion every hour	Produces **three** cushion covers every hour
Wages: £10.00	Wages: £10.00	Wages: £10.00
Overheads: £2.00	Overheads: £4.00	Overheads: £6.00
Production cost per cover: £12.00	Production cost per cover: £7.00	Production cost per cover: £5.33
Price point: £12.00	Price point: £12.00	Price point: £12.00
Loss: £0 Profit £0	Loss: £0 Profit: £5.00	Loss: £0 Profit: £6.89

A) Which machinist is working at break-even point?

- Machinist 1
- Machinist 2
- Machinist 3

B) Which machinist is likely to be working at standard performance rate?

- Machinist 1
- Machinist 2
- Machinist 3

C)Which machinist is likely to be working over standard performance rate?

- Machinist 1
- Machinist 2
- Machinist 3

4. Draw a line to match the following payment system to the process

Payment system	Process
Incentive/Bonus	Agreed set wage rate regardless of the number of products made
Combination	Extra amount offered for specific achievement
Piece rate	Payment by results, a set amount for each item produced. The more produced the higher the pay
Flat/Basic rate	Mix of payment by results and agreed pay rate

GROUNDWORK: Completing this groundwork is an option, but it is recommended. Completion will help you to better understand your role, your company, and internal processes and procedures. For those undertaking an apprenticeship these activities will help you gather information relevant to the End Point Assessment. **Note:** For those learners, who are independent and not yet working as an employed production sewing machinist, alternative recommendations are included.

Does the company you work for use performance rating. If yes, what is your current performance?

If you receive performance information from your company, gather the information and analysis your performance over a four-week period and answer the following questions:

- What is your average performance over a four-week period?
- What is usually your most productive day of the week?
- What time of the working day are you usually most productive?
- If you have a lower than standard rate, what can you do to improve it?

If your company does not operate a performance system and do not have timings, ask them –

'On average how many operations /products am I expected to do/make a day? 'This will give you the number of operations/ products you need to do, to achieve 100% performance. Then monitor and record how many operations you do/products you make each day over a four-week period.

Use this information to work out your performance rate i.e. if the company say 10 operations/product per day and you are making 10 you have reached 100% performance 7 you are just below 75% performance 12 you are working at 120% performance. Then record.

- Your average performance over a four-week period?
- Your most productive day of the week?
- The time of the working day are you usually most productive?
- Ideas on how you can improve your rate (if required)

Performance and pay

When paying staff, employers can use various methods and combinations. All companies must pay the living wage. However, the methods used depends on the size and output of the company. The most common payment systems used within the fashion and textiles industry are:

- **Flat/Basic rate** – agreed wage paid by the hour, day, week, or month regardless of the number of products made. Flat or Basic rate systems work well for many employers and workers. However, flat rate does not provide sufficient motivation for workers to achieve the required level of performance.

- **Piece rate** – payment by results. Employee receives a set amount for each item produced. The more produced the higher the pay. Piece rate can motivate and improve performance. The prospect of higher pay for increased output often provides an incentive to improve and maintain performance levels.

- **Combination** – mix of flat and piece rate systems. Used in companies with orders that are difficult to predict and may need to meet unexpected deadlines.

- **Incentives, bonuses, overtime** – introduced to help meet targets and achieve deadlines.

Whether you are paid a flat/basic rate or a piece rate it is likely that the wage has been worked out by timing and rating sewing operations.

Some companies offer Incentive schemes; they can be short or long term and are usually based on individual or group performance rates. Weekly or monthly production bonuses are generally offered over a short-term period.

If you are working in a team or cell system, targets and bonuses are usually set for the whole team, and each team member will receive the same pay.

Your company may offer longer-term schemes such as profit sharing and share option schemes, these may not provide as much incentive to individual workers as schemes based on personal performance. These schemes can help to generate a long-term interest in the success of the organisation.

Production Costs

Production targets are a common part of the production process. To understand how production targets are set you must be aware of underlying basic costs known as overheads.

Every company must pay overheads, which are fixed and remain the same no matter how many products are made. These costs include heating, lighting, rent, rates, and administration costs, known as fixed overheads.

Companies must also cover variable overheads, which are different to Fixed Overheads as they change with production a requirements and volume. Common variable overheads include materials, marketing, logistics or sales commissions.

Wages paid to workers on a flat rate basis are a fixed overhead. Piece rate and extra time spent on the job is a variable overhead.

So, if fewer products are made, the fixed overheads remain the same, the cost of making each product goes up and the company becomes less competitive

For example

A factory has fixed overheads of £10,000 per week
Each product cost £2.00 in **fixed overheads** to make, so the company must make 5000 products, to the required quality standard and allocated timing, per week just to cover fixed overheads
If just 4000 products are made in one week, the company is not able to cover the fixed overheads and is running at a loss.

Watch the video 5.2 **Quantity requirements 08.00 to end** for further detail on overheads, and production costs

Production Targets

Production Targets are set by the company to ensure overheads are covered and a profit is made.

The Production Target is usually the overall, expected number of products to. be made across a certain time. There may also be individual production targets for each department, production line or individual.

Production targets may be broken down into weekly, daily, or even hourly targets that provide a precise, focused way to communicate short term requirements. Target results are also used to compare actual performance to estimated performance and help toward production planning including schedules and budget.

Production targets are an effective way of motivating production sewing machinists to achieve a standard performance level.

To ensure targets are achievable, realistic and time phased, management ensure the product types and style, the machinists experience, ability, and skills are considered.

When training, short-term targets relating to specific operations are often applied. This aims to help you to achieve short-term wins following a step-by-step approach, leading to achievement of the long-term goal. An example of a realistic short-term target could be to increase performance by 5% to 10% each week. A realistic long-term target could be to increase overall performance by 50% in a month.

To meet the challenge of set targets, it is important to recognise what is expected of you and the resources you will need. You and your manager must ensure:

- Good communication, so that everyone is clear on the target, what needs to be done and the time available.
- You have been trained on the operation and the target considers your skills level and ability.
- Appropriate resources are readily available to you, this includes the right machinery and equipment, the cut components, and trimmings.

So, what happens if Production Target are consistently not met?

Setting a Production Target is difficult, if they are too easy the target won't help to improve performance, if they are too hard, staff won't event try to achieve them.

Companies know that the best targets are attainable ones with a healthy element of flexibility and designed to challenge the skills and ability of the team/individual.

If targets are consistently not met the job, target, staff, and resources will be analysed and changes will be made. This could mean extra training, different machines, different sewing techniques etc.

If, after changes are made, the target is still not being achieved, this could lead to short and long-term issues.

In the short-term unmet production targets could result in

- Missed deadlines/ delivery dates
- Overrunning costs
- Loss of customers
- Unmotivated staff

In the long-term unmet production targets could result in

- Low staff moral
- High employee turnover
- Loss of business

Knowledge Challenge 5.9

1. Overheads are costs that employer have to pay in order to run a company. There are two types of overheads.

   What type of overhead includes costs for heating, rent and lighting?

   - Variable Overhead
   - Fixed Overhead

2. Overheads are costs that employer have to pay in order to run a company. There are two types of overheads. What type of overhead includes costs for wages and materials?

   - Variable overheads
   - Fixed overheads

3. Company A produces 6000 items per week and have overheads to pay of £1.66. per item.

   Company B produces 10,000 products per week and have overheads to pay of £0.5 per item.

   What is the total amount of overheads per week for Company A

   1. £9,960
   2. £12,000
   3. £8,000

4. What is the total amount of overheads per week for Company B
   1. £4000
   2. £5000
   3. £6000

5. Which is the most profitable company and why?

   - Factory B because overheads per item are minimal making production cheaper and maximising profit.
   - Factory A because they make less products per week with overheads of 1.66 per item
   - Factory B because they make more products

6. Highlight **two** reasons why Production Targets are put in place

   - To force the workers to produce faster
   - To encourage and motivate the workforce
   - To help meet deadlines

- To enforce unrealistic goals

7. See the statement below and fill in the missing words, the first letters of each word are S and E

   Production targets need to be communicated clearly and consider the machinists _____ and _____

8. The consequence of consistently not meeting production targets can be serious. See the fictional paragraph below and fill in the blank words. The first letters of each word are D and T

- My department was not meeting production targets, this has happened regularly and as result we missed d_____ and lost customers who relied on receiving orders on time. Our company is now reviewing the t_____ and helping us to achieve them.

