



Australian Government

A U S T R A L I A N
A P P R E N T I C E S H I P S

Your Life. Your Career. Your Future.

Engineering

Practice Aptitude Quiz

Practice Aptitude Quiz

Part 1: About this quiz

Use this quiz to prepare for an Apprenticeship in Engineering

This quiz:

- Is NOT a formal assessment tool or pre-requisite for any job application
- Shows key learning standards for the Engineering industry
- Has been developed with the help of industry leaders, TAFE and high schools

Quiz details

This quiz will:

- Take approximately 1 hour and 20 minutes to complete
- Ask you numeracy and literacy questions specific to the Engineering industry
- Assess your literacy and numeracy at a Year 10 standard
- Allow you to use a calculator
- Share correct answers at the end

Who should take this quiz?

You should complete this quiz if you:

- Are thinking about starting an Apprenticeship in the Engineering industry
- Want to practise for a formal aptitude test

Need help with your literacy and numeracy skills?

If you want to improve your literacy and numeracy skills, reach out to any of the below:

- Australian Apprenticeship Support Network providers
- Your Registered Training Organisation when you start training
- Reading Writing Hotline:
1300 655 506
www.readingwritinghotline.edu.au
- Careers advisers and your teachers (if you're in high school)

More information about the Engineering industry

Visit www.yourcareer.gov.au/industries/e/construction

On this page you'll be able to:

- See the most popular Engineering industry occupations
- Get general information and statistics about the industry
- Search for Engineering industry courses

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How to use this quiz

This is an interactive form that can be filled out on your computer.

You can either:

- Fill it out on your computer; OR
- Print it out; OR
- Write your answers down on paper as you go.

Use the answers section at the end of the quiz to see how you went.

How to complete this quiz on your computer

1. Download and save the quiz onto your computer
2. Open the file from your computer
3. Fill in the form using a keyboard and mouse

Practice Aptitude Quiz

Part 2: The Quiz

Section 1: Language and Literacy

1. Write the following words or group of words into alphabetical order:

Toolmaker	
Engineering	
Computer aided manufacture	
Boilermaker	
Weighing	
Computer numerical controlled	
Computer aided design	
Welders	
Engineering patternmakers	
Design moulds	

2. The following text has 10 spelling errors. Correct those errors and list them in the order you find them:

Toolmackers make precision equipement and tools used to manufacture mechinary. They use precision measuring equipment and may use CNC machines and computer ayded manufacturing (CAM) systems to acheive very precise finishes and sises. Any company manufactering presed metal or plastic items requires the service of a toolmacker.

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.

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3. The following text has 12 spelling and grammar errors. Correct those errors and list them in the order you find them:

Computer Aided Design (CAD) systems are used by Mechanical Drafttters to simulate the preformance of a product. They can test wether a brige will carry predicted lodes safely, or even wether tomatoe sauce will pore correctly from a newlee designed container.

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.
11.	12.

4. Read the following passage and answer the questions that follow:

Engineering Health and Safety

In the engineering trades, you are constantly using your mind and body to maintain and repair products. This means you need to look after yourself carefully to have a long and safe career.

It is important to receive the correct information, training and supervision throughout your apprenticeship to protect your safety. At times, you may feel under pressure to take on tasks you haven't been adequately trained for or to rush and cut corners for a job you need to get done quickly. Any of these things could lead to an injury or an accident.

Let's look at the main hazards of engineering and the way we can control and protect ourselves and our workmates.

Burns are common in engineering and are often caused by poor preparation or not using the correct safe work procedures or Personal Protective Equipment (PPE). Different types of processes can cause different types of burns. Welding can cause radiation burns or hot pieces of material can fly towards you. While machining metals and hot materials could also burn you. Welding can produce sparks that can easily start a fire so you need to ensure that no rags, loose clothing or combustible materials are in your work area. Every engineering process that can cause burns will have a safe work procedure and PPE designed to keep you and those around you safe.

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c. There are different types of burns. What are they?

d. Name 2 types of PPE mentioned in the text:

e. What hazardous activities can lead to muscular or skeletal damage?

Section 2: Numeracy

1. Convert the following:

a. \$2.41 to cents

b. 182 days to weeks

c. 3 hours & 12 seconds to seconds

d. 8 kilometres to metres

e. 3.5 kilograms to grams

2. How many hours and minutes from 7:45 am to 3:15 pm?

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3. Select the best estimate for the following:

a. $4,249 \times 71$

280,000

150,000

28,000

b. $80,000 \div 38$

200

2,000

20,000

4,000

4. Round the following:

a. 35.6754 to two decimal places

b. 425.8 to the nearest tens

5. Find the decimal number halfway between:

a. 0.6 and 0.8

b. 2.8 and 2.9

6. Select the correct answer to:

$18.642 \div 0.02$

9.321

93.21

9321

932.1

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7. Munro, a qualified tradesperson earns \$1,100 a week. He gets a pay rise of 5%. What is his new wage?

8. 1000 brackets are manufactured. 60% need to be delivered in 24 hours. How many brackets are required?

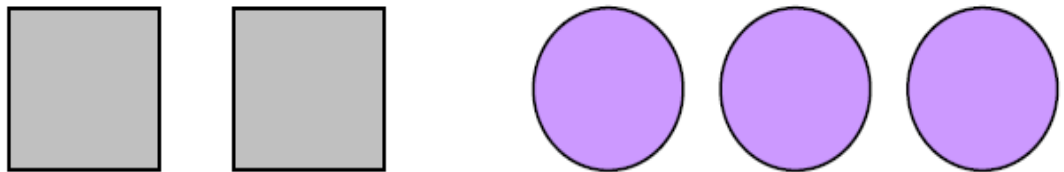
9. In an order of 2000 hexagonal nuts, 40 were defective. What percentage were:

a. Defective _____

b. Good _____

10. The price of a micrometre is normally \$84. During a sale, there was a 25% reduction. Calculate the sale price?

11. What is the ratio of the number of circles to squares?



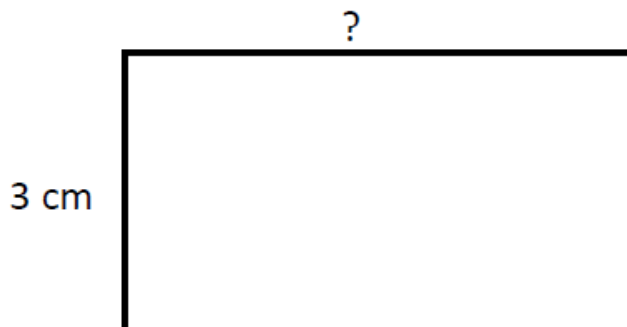
12. A cutting wheel cuts through 0.5 cm of steel in 1 minute. How long will it take to make a cut 3.5 cm deep?

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13. An air conditioning unit circulates 320 cubic metres of air per minute. How many cubic metres of air is circulated in an hour?

14. Two gears have 12 and 15 teeth respectively. What is the ratio of the number of teeth on the first gear to the number of teeth on the second gear in lowest terms?

15. The area of a tin plate is 15 cm^2 . Its width is 3 cm. Find the length of the plate?



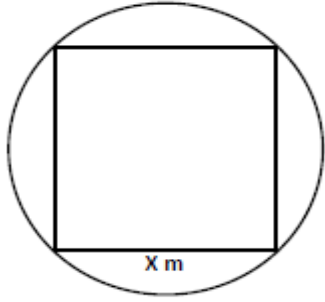
16. A piece of wire is 24 mm long and is bent in the shape of a rectangle so that the length is twice its width. Find the area of the rectangle?

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17. A square is inscribed in a circle of radius 5 m.

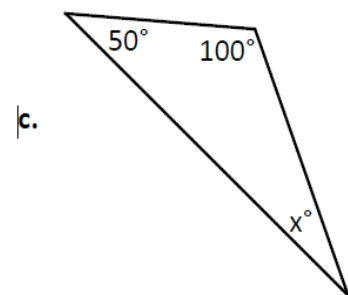
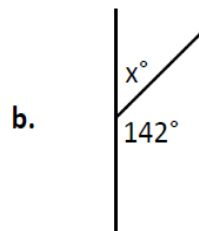
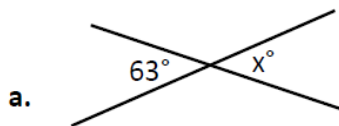
Calculate the following:

- The area of the circle correct to two decimal places, using the formula $A = \pi r^2$, where $\pi = 3.14$.
- The diameter of the circle.
- The value of x correct to two decimal places, using Pythagoras's Theorem: $a^2 + b^2 = c^2$.
- The area of the square, correct to two decimal places using your answer to question c.

	a. _____
	b. _____
	c. _____
	d. _____

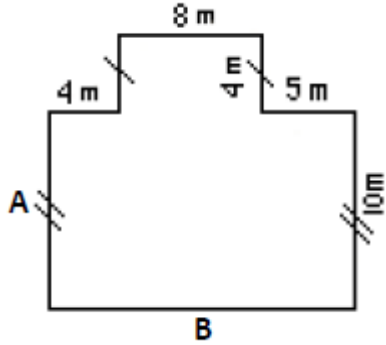
18.

Find the value of x :



Practice Aptitude Quiz

19. From the sheet metal shown, calculate the unmarked lengths 'A' and 'B':

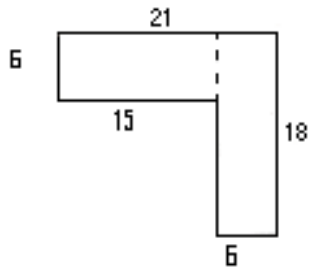


a. A =
b. B =

20. Calculate the area of the shapes shown:

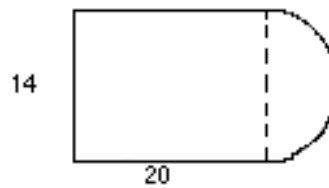
For b. use $\pi = 3.14$. All calculations are in mm.

a.



Area =

b.



Area=

21. Irenka the engineer is paid \$27.00 per hour plus time and a half for any hours over 35 hours. If she worked 42 hours, what was her pay for:

a. The first 35 hours work?

b. The overtime work only?

c. Total pay?

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22. An engineer cut two pieces of metal rod each $10\frac{1}{2}$ cm long from a rod 50 cm long. How much of the original rod was left?

23. The weight of three bolts are 52 g, 49 g, and 61 g. What is the average weight of the bolts?

24. A 4-metre length of steel is cut into 5 equal sections. How long is each piece?

25. A machinist drills a hole 65 mm into a block of steel 10 cm thick. How much further is left to drill?

26. The following lengths were cut from a piece of angle iron: 8 cm, 27 cm, 41 cm, 37cm, and 16 cm. What was the total length cut?

27. A welder requires 8 welding rods to weld a bracket into place. How many welding rods are required to weld 12 brackets?

28. Nine identical pieces of sheet metal have a total thickness of 0.27 cm. What is the:

a. Thickness of 1 piece

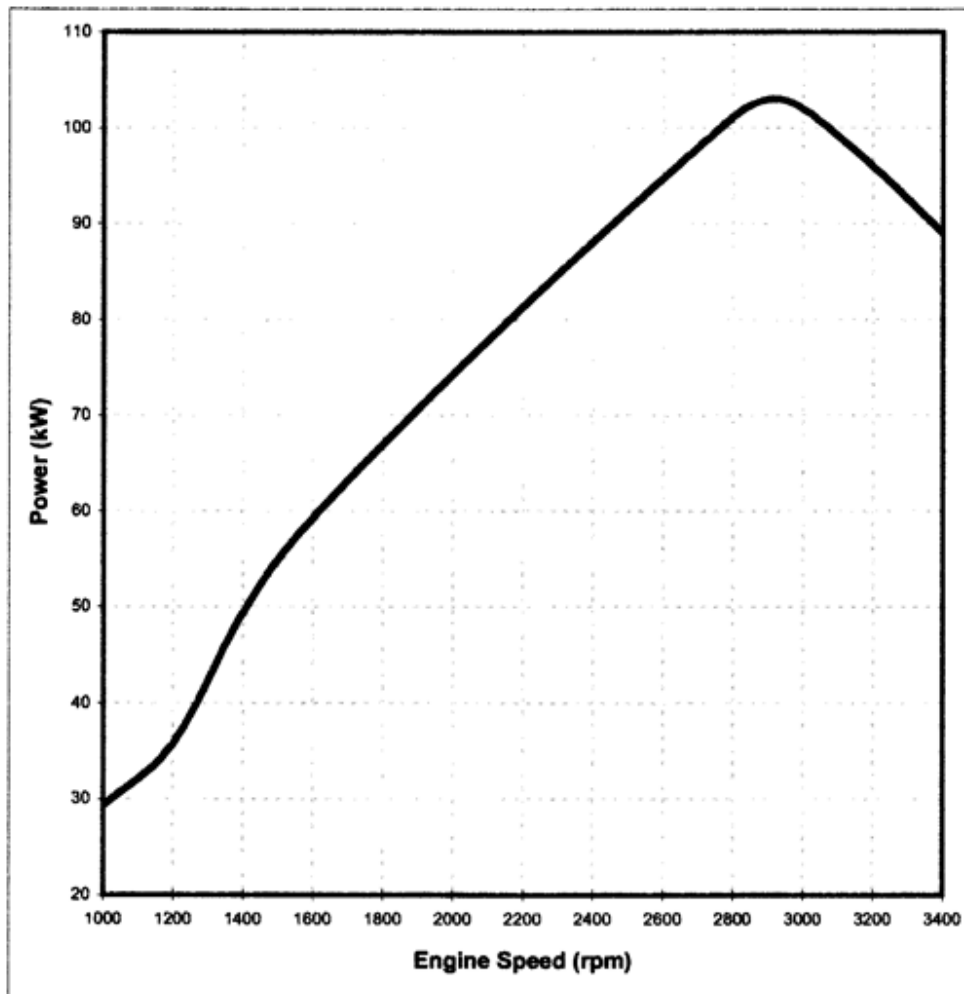
b. Thickness of 4 pieces

29. An assembly worker takes 30 seconds to build a component. How many components can be assembled in 1 hour?

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30. If one litre of paint covers 12 square metres, how many litres of paint is needed to paint a lounge room which has an area of 36 square metres?

31. Considering at the graph, complete the table below by filling the three empty cells:



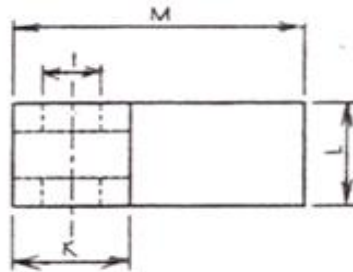
Power KW	RPM
	1400
60	
	2300

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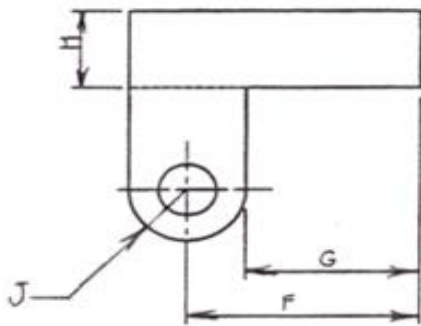
32. Drawing Reading Exercise:

From the orthographic drawings shown below, fill in the missing dimensions.

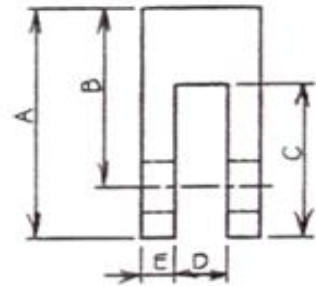
Please note that the drawing is not to scale.



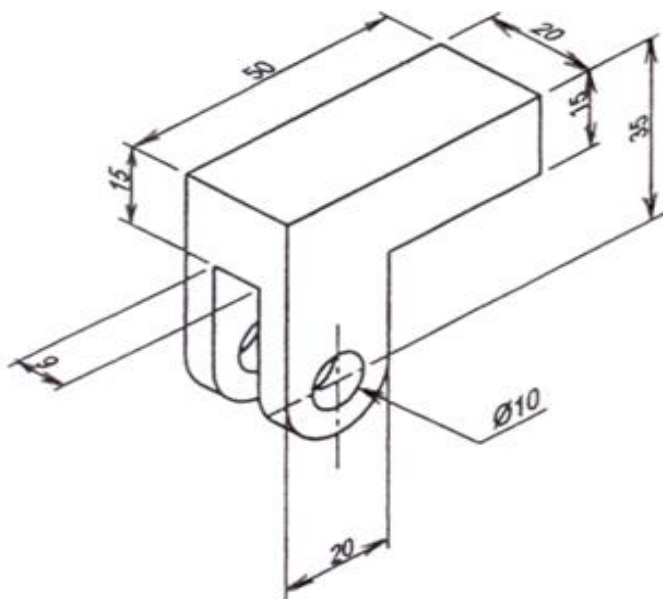
TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW



- A = _____
- B = _____
- C = _____
- D = _____
- E = _____
- F = _____
- G = _____
- H = _____
- I = _____
- J = _____
- K = _____
- L = _____
- M = _____

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Answers

Section 1: Language and Literacy

1. Boilermaker, Computer aided design, Computer aided manufacture, Computer numerical controlled, Design moulds, Engineering, Engineering patternmakers, Toolmaker, Weighing, Welders
2. Toolmakers, equipment, machinery, aided, achieve, sizes, manufacturing, pressed, requires, toolmaker
3. Aided, systems, Mechanical, Drafters, performance, whether, bridge, loads, whether, tomato, pour, newly
4.
 - a. Correct information, training instruction and supervision throughout your apprenticeship
 - b. Burns, lacerations, injuries from manual tasks, sight and hearing hazards
 - c. Radiation burns, burns from sparks
 - d. Face shield, goggles, hearing protection
 - e. Repetitive actions, poor or awkward postures, exerting high force to push, pull or lift heavy things, vibration

Section 2: Numeracy

1. a. 241 cents b. 26 weeks c. 10812 seconds d. 8000 m e. 3500g
2. 7 hours & 30 minutes
3. a. 280000 b. 2000
4. a. 35.68 b. 430
5. a. 0.7 b. 2.85
6. 932.1
7. \$1155
8. 600
9. a. 2% b. 98%
10. \$63
11. 3:2
12. 7 minutes
13. 19200 m³
14. 4:5
15. 5 cm
16. 32 mm²
17. a. 78.5 m² b. 10 m c. $\sqrt{50} \text{ m} = 7.07$ d. 49.98 m²
18. a. 63° b. 38° c. 30°
19. a. 10 m b. 17 m
20. a. 198 mm² b. 433.86 mm²

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21. a. \$945 b. \$283.50 c. \$1,228.50

22. 29 cm

23. 54 g

24. 0.8 m

25. 35 mm

26. 129 cm

27. 96 welding rods

28. a. 0.03 cm b. 0.12 cm

29. 120 components

30. 3 litres

31.

POWER kW	RPM
50	1400
60	1600
85	2300

32.

a. 45 b. 35 c. 30 d. 9 e. 5.5 f. 40

g. 30 h. 15 i. 10 j. 10 k. 20 l. 20

m. 50