A+ National

PRE-APPRENTICESHIP

Maths & Literacy for Plumbing

Contents

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MATHEMATICS

Unit 4: General Mathematics

Short-answer questions

Specific instructions to students

- This unit will help you to improve your general mathematical skills.
- Read the questions below and answer all of them in the spaces provided.
- No calculators.
- You will need to show all working.

QUESTION 1

What unit of measurement would you use to measure:

a a length of copper pipe?

Answer:

b the temperature of water?

Answer:

c the amount of drain cleaner in a bottle?

Answer:

d the weight of a toilet?

Answer:

e the flow rate of water?

Answer:

f the amount of pipe sealant?

Answer:

g the cost of a piece of pipe?

Answer:

QUESTION 2

Write an example of the following and give an example of where it may be found in the plumbing industry.

a percentages

Answer:

b decimals

Answer:

c fractions

Answer:

d mixed numbers

Answer:

e ratios

Answer:

f angles

Answer:

QUESTION 6

The following items are purchased for a workshop: a fluorescent light for $39.99, a crimping toolkit for $9.99, a socket set for $39.99, a digital thermometer for $12.99, a set of screwdrivers for $49.99 and a 25 m extension lead for $14.99.

a How much is paid in total?

Answer:

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b What is the final cost after a 10% discount?

Answer:

QUESTION 7

A plumbing store offers 20% off the cost of screwdriver sets. If a set is priced at $36 before the discount, how much will each set cost after the discount?

Answer:

QUESTION 8

Wrenches are discounted by 15%. If the recommended retail price for a large wrench is $15.50 each, what is the discounted price?

Answer:

QUESTION 9

Some new drill bits cost $16.90 as the regular retail price. The store then has a 20% sale. How much will the drill bits cost during the sale?

Answer:

QUESTION 10

If a 1200 amp jump-starter retails for $99, how much will it cost after the store takes off 30%?

Answer:

Unit 9: Measurement Conversions

Short-answer questions

Specific instructions to students

- This unit is designed to help you both to improve your skills and to increase your speed in converting one measurement unit into another.
- Read the following questions and answer all of them in the spaces provided.
- No calculators.
- You will need to show all working.

QUESTION 1

How many millimetres are there in 1 cm?

Answer:

QUESTION 2

How many millimetres are there in 1 m?

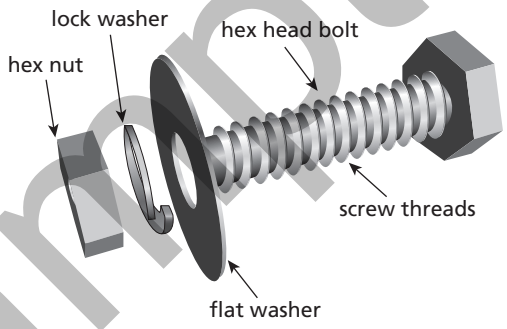
Answer:

QUESTION 3

How many centimetres are there in 1 m?

Answer:

QUESTION 4



If a screw has 20 threads in 2 cm, how many threads would there be in 10 cm?

Answer:

QUESTION 5

How many millilitres are there in 4.8 L of de-greaser?

Answer:

QUESTION 6

How many litres are there in 3500 mL of drain cleaner?

Answer:

QUESTION 7

A plumber's work van weighs ½ a tonne. How many kilograms is that?

Answer:

QUESTION 8

A workman's ute weighs 2 t. How many kilograms is that?

Answer:

QUESTION 9

A small truck carrying piping weighs 4750 kg. How many tonnes does it weigh?

Answer:

QUESTION 10

A trailer measures 180 cm in length and 120 cm across the back. How far is it around the perimeter of the trailer?

Answer:

QUESTION 5

The ratio of teeth on cog A to cog B is 3 : 1. If the number of teeth on cog A is 12, how many teeth are on cog B?

Answer:

QUESTION 6

The ratio of teeth on cog A to cog B is 2 : 1. If the number of teeth on cog A is 18, how many teeth are on cog B?

Answer:

QUESTION 7

The ratio of teeth on cog A to cog B is 3 : 1. If the number of teeth on cog A is 21, how many teeth are on cog B?

Answer:

QUESTION 8

The ratio of teeth on cog A to cog B is 3 : 2. If the number of teeth on cog A is 6, how many teeth are on cog B?

Answer:

QUESTION 9

The ratio of teeth on cog A to cog B is 4 : 3. If the number of teeth on cog A is 16, how many teeth will be on cog B?

Answer:

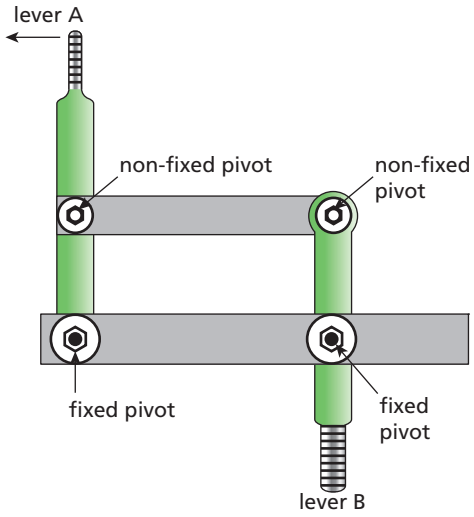
QUESTION 10

The ratio of teeth on cog A to cog B is 4 : 3. If the number of teeth on cog A is 24, how many teeth will be on cog B?

Answer:

QUESTION 4

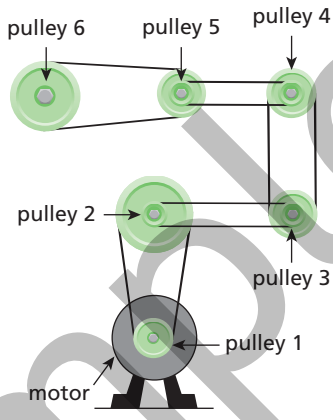
Looking at the following diagram, if lever A moves to the left, in which direction will lever B move?



Answer:

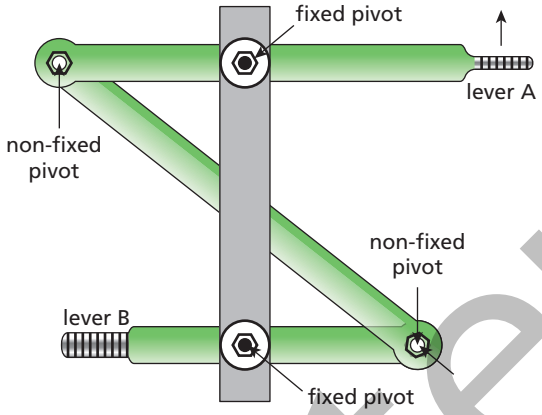
QUESTION 5

In the following diagram, pully 1 turns clockwise. In what direction will pully 6 turn?



Answer:

QUESTION 6



If lever A is pulled up, what will happen to lever B?

Answer:

Section A: Literacy

Spelling

Read the passage below and then underline the 20 spelling errors.

10 marks

> Andrew the Plumber got an urgant phone call at 6.00 a.m. The house akross the road had sprung a leek. It was a two-story house and the toilat had started leaking upstairs. The residant did not notise the leak untill he had walked into the kitchan and saw a huge pudle of water on the floor. Gordy, who was Andrew's co-worker, was asked to atend as he had experiance in fixing upstairs toilets.
>
> Within minates, both Andrew and Gordy were upstairs survaying the site of the leak. It was evidant that the water was coming out of the top of the cisstern. Gordy took the top off of the unit and peared inside. The float had come off and the water continued to flo after every flush. The resident had turned the water off at the maynes after he had scene the damage that had been caused downstairs. It took Gordy only a few minutes to reattach the float and to turn the water mains back on.

Correct the spelling errors by writing them out with the correct spelling below.

Alphabetising

Put the following words into alphabetical order.

7 marks

Ladder	Pipe wrench
Hacksaw	Laser level
Adjustable wrenches	Tape measure
Screwdrivers	Pipe fitters
Rib-joint pliers	Plunger
Locking pliers	Pipe benders
Pipe cutters	Drain unblocker

Comprehension

Short-answer questions

Specific instructions to students

- Read the passage and then answer the questions that follow.

On a cold winter morning, Dean received a call-out at 8.00 a.m. to a home owner out in the northern suburbs. She was having trouble with her toilet overflowing due to a problem with the sewerage pipe. Dean had been working for over 3 years as a plumber and he knew that this was a common problem. Next to the house, several large trees had established themselves and the roots of the trees had made their way into the sewerage pipe. Dean had to find out where the trees had been able to get into the sewerage pipe, which is a rich source of nutrients for the trees.

Dean traced the problem out to the front of the house where the main sewerage pipe was. He was able to find the cover for the pipe and he went back to his truck to get his rotor rooter (also called an electric eel). This was a long steel cable that could be rotated and twisted, and basically destroyed the root that had penetrated the sewerage pipe. It took around 70 minutes to mulch the roots as they were well established and had caused significant blockage. This blockage caused the water and sewage to back up in the pipes, and was the reason why the toilet was overflowing.

QUESTION 1 **1 mark**

At what time did Dean receive the call-out?

Answer:

QUESTION 2 **1 mark**

What was the problem that Dean was called out to fix?

Answer:

Formulae and data

Circumference of a Circle

$C = \pi \times d$
where: C = circumference, $\pi = 3.14$, d = diameter

Diameter of a Circle

Diameter (d) of a circle $= \frac{\text{circumference}}{\pi(3.14)}$

Area

Area = length × breadth and is given in square units
$= l \times b$

Volume of a Cube

Volume = length × width × height and is given in cubic units
$= l \times w \times h$

Volume of a Cylinder

Volume of a cylinder (V_c) $= \pi(3.14) \times r^2$ (r^2 = radius × radius) × height
$V_c = \pi \times r^2 \times h$

Pythagoras' Theorem

$a^2 + b^2 = c^2$