

ANSWER **Part A - Individual Questions Part 1 of 2 ** ANSWERS

Name:	

- 1.) Calculate: Calculate 4 + 16 7 + 41 26
- 2.) What is 78.628 rounded to the nearest whole number?
- 3.) Calculate the sum of the following mixed fractions:
 - $1\frac{1}{3} + 4\frac{2}{3}$

4.) Safety Factor = <u>Maximum load a structure can support before breaking</u> Actual load that a structure is designed to support

Calculate the safety factor if the maximum load is 60 kg and the actual load is 40 kg.

Answer:	
	1.5

5.) Find the answer for F_f where: $F_f = \mu m g$

$\mu = 0.55$ m = 10 kg g = 9.81 m/s2	Where: F = Force due to friction (units of Newtons (N)) $\mu = co$ -efficient of friction m = mass (units of kilograms, kg) r = constant (conseleration due to conthis maximum 0.01 m (c2)
	g = constant (acceleration due to earth's gravity, 9.81 m/s ²)

Answer:	
	53.955 N

Answer: 79

Answer: 6

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6.) Simplify the expression: 4(9+6r)

- 7.) What is the next number in the sequence? 12, 24, 36, 48, ?
- 8.) The **air** in our atmosphere is composed of molecules of different gases.

By volume, the composition of air is

78% nitrogen21% oxygen?% other gases including argon, carbon dioxide and others

What is the % composition of other gases?

9.) One of the most widely used types of stainless steel is known as "Stainless Steel 18-8" since its composition is 18% chromium and 8% nickel.

Write 8% as a fraction (make sure to reduce the fraction)

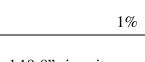
10.) The 2014 Porsche 911 has the following specifications:

350 horsepower
289 km/hr top speed
4.8 seconds 0 to 100 km/hr
64 liters fuel tank capacity
Average fuel consumption = 9.1 liters of fuel used for every 100 km of driving.
Mass 1815 kg
Price \$96,200

If the average car has about 142 horsepower, what percent more horsepower does a Porsche 911 have compared to the average car?

Answer:	*
208 hp (half marks)	
146% more (ful	l mk)

11.) If	
x = 4 Then evaluate the following expression:	Answer:
5x + 2	22



Answer:	
	2/25

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36 + 24r

Answer: 60

Answer:

Answer:



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12.) A type of glass used to make optical lenses is called BK-7. It has an index of refraction of 1.5

Write in the index of refraction of BK-7 as a fraction.

Answer: * 3/2 (half marks) 1 1/2 (full marks)

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13.) Ohm's law is one of the most important principles used in Electrical Engineering.Ohm's law states that the current through a conductor between two points is directly proportional to the potential difference across the two points as described in equation below:

I is the current through the conductor in units of amps (A) V is the voltage measured across the conductor in units of volts (V) R is the resistance of the conductor in units of ohms (Ω)

$$I = \frac{V}{R}$$

What is current flow through a circuit if the voltage is 12V and resistance is 3Ω ?

Answer:

4 ohms

14.) Electrical Energy is the capacity to do work.

Electrical energy is the product of power multiplied by the length of time it was consumed.

Energy = power x time Power = voltage x current or more simply written as $P = V \times I$

Where Energy has the unit of in joule (J) P is power in unit of watts (W) Time has the unit of second (s)

Calculate the energy consumed by a motor that uses 100 Watts of power and runs for 10 seconds?

Answer: 1000 J

15.) Calculate the following: -1^3

Remember: -1 x -1 = +1 +1 x -1 = -1 Answer: -1



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16.) If the Prince Edward Viaduct was constructed 6 years earlier than Lasalle Causeway and Lasalle Causeway was constructed 3 years later after the Leaside Bridge.

How many years apart between when the Prince Edward Viaduct and the Leaside Bridge were built?

Answer:	
	*
	3 yrs

17.) The Environmental Engineer conducted two test pits, each with an area of 25m², to collect soil samples for chemical analysis. If the test pits are placed side by side to form a larger rectangular excavation pit.

What will be the working total of the excavated area?

Answer:	
	50 m^2