THIS IS THE SOLUTIONS FOR PAPER NUMBER 26

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 26.1 through 26.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 26.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 26.1.1 through 26.1.6).

Question 26.1.1 (6, 11, 26)

Since the possiblity of smoking customer is $a = .540$, and the possiblity of equal or above 30 years old customer is $b = .6600$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .540 = .460$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .6600 = .3400$. So the possibility of non-smoking and under 30 years old customer is $c \times d = .156$.

Question 26.1.2 (6, 6, 21)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (70.0, 2.0, -2000.0)N$ and $m = 50.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(70.0, 2.0, -2000.0)N}{50.0kg} \\ &= (1.4000, 4.0000 \times 10^{-2}, -40.000)ms^{-2} \\ &= (18144., 518.40, -518400.)km/h^2.\end{aligned}$$

Question 26.1.3 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$6.00000000 \times 10^{24}$	$6.000000000 \times 10^{24}$	3.33×10^{-11}
Venus	2.00×10^{24}	4.00×10^{24}	2.50×10^{-11}
Earth	8.00×10^{24}	4.00×10^{24}	1.00×10^{-10}
Mars	7.00×10^{24}	9.00×10^{24}	1.73×10^{-11}
Jupiter	4.00×10^{24}	7.00×10^{24}	1.63×10^{-11}
Saturn	5.00×10^{24}	8.00×10^{24}	1.56×10^{-11}
Uranus	3.00×10^{24}	8.00×10^{24}	9.38×10^{-12}
Neptune	9.00×10^{24}	4.00×10^{24}	1.13×10^{-10}

Question 26.1.4 (6, 13, 28)

Question 26.1.5 (6, 12, 27)

Since the possiblity of non-smoking customer is $a = .660$, and the possiblity of equal-or-above 30 years old customer is $b = .3000$, the possiblity of smoking customer is $c = 1.0 - a = 1.0 - .660 = .340$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .3000 = .7000$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.340 \times .3000 = .102$
smoking and under 30 years old	$.340 \times .7000 = .238$
non-smoking and equal-or-above 30 years old	$.660 \times .3000 = .198$
non-smoking and under 30 years old	$.660 \times .7000 = .462$

And the total summation of all possibilities is 1.000.

Question 26.1.6 (6, 10, 25)

QUESTION 26.2 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 9.0, -8000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 9.0, -8000.0)N}{50.0000kg} \\ &= (1.80, .18, -160.00)ms^{-2} \end{aligned}$$

QUESTION 26.3 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.000, 5.0000, -9000.0)N$ and $m = 58.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(80.000, 5.0000, -9000.0)N}{58.0000kg} \\ &= (1.3793, 8.6207 \times 10^{-2}, -155.17)ms^{-2} \\ &= (17876., 1117.2, -2.0110 \times 10^{6})km/h^2. \end{aligned}$$

QUESTION 26.4 (3, 3, 3)

QUESTION 26.5 (5, 5, 5)

QUESTION 26.6 (4, 4, 4)

QUESTION 26.7 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 7.0, -7000.0)N$ and $m = 58.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 7.0, -7000.0)N}{58.0kg} \\ &= (1.55, .12, -120.69)ms^{-2} \end{aligned}$$

QUESTION 26.8 (8, 15, 60)

QUESTION 26.9 (9, 16, 70)

Roots to the equation

$$7 \times x^2 - 28 \times x - 539 = 0$$

are -7 and 11 .

Let us verity -7 first: $7 \times x^2 - 28 \times x - 539 = 343 + (196) + (-539) = 539 + (-539) = 0$

Then verity 11: $7 \times x^2 - 28 \times x - 539 = 847 + (-308) + (-539) = 539 + (-539) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 26.1 through 26.9. And any one of them may contain more than one sub-question,

thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 27

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 27.1 through 27.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 27.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 27.1.1 through 27.1.6).

Question 27.1.1 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 6.0, -3000.0)N$ and $m = 52.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 6.0, -3000.0)N}{52.0kg} \\ &= (1.7308, .11538, -57.692)ms^{-2} \\ &= (22431., 1495.4, -747692.)km/h^2. \end{aligned}$$

Question 27.1.2 (6, 10, 25)

Question 27.1.3 (6, 6, 21)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.0, 5.0, -5000.0)N$ and $m = 50.0kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(50.0, 5.0, -5000.0)N}{50.0kg} \\
&= (1.0000, .10000, -100.00)ms^{-2} \\
&= (12960., 1296.0, -1.2960 \times 10^6)km/h^2.
\end{aligned}$$

Question 27.1.4 (6, 11, 26)

Since the possiblity of smoking customer is $a = 7.0 \times 10^{-2}$, and the possiblity of equal or above 30 years old customer is $b = .8200$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - 7.0 \times 10^{-2} = .930$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .8200 = .1800$. So the possibility of non-smoking and under 30 years old customer is $c \times d = .167$.

Question 27.1.5 (6, 13, 28)

Question 27.1.6 (6, 7, 22)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (30.0, 3.0, -3000.0)N$ and $m = 52.0kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(30.0, 3.0, -3000.0)N}{52.0kg} \\
&= (.57692, 5.7692 \times 10^{-2}, -57.692)ms^{-2} \\
&= (7476.9, 747.69, -747692.)km/h^2.
\end{aligned}$$

QUESTION 27.2 (4, 4, 4)

QUESTION 27.3 (3, 3, 3)

QUESTION 27.4 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.000, 9.0000, -9000.0)N$ and $m = 58.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(80.000, 9.0000, -9000.0)N}{58.0000kg} \\
&= (1.3793, .15517, -155.17)ms^{-2} \\
&= (17876., 2011.0, -2.0110 \times 10^6)km/h^2.
\end{aligned}$$

QUESTION 27.5 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (40.0, 2.0, -2000.0)N$ and $m = 52.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(40.0, 2.0, -2000.0)N}{52.0000kg} \\ &= (.769, 3.8 \times 10^{-2}, -38.462)ms^{-2}\end{aligned}$$

QUESTION 27.6 (5, 5, 5)

QUESTION 27.7 (8, 15, 60)

QUESTION 27.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.0, 8.0, -8000.0)N$ and $m = 58.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(80.0, 8.0, -8000.0)N}{58.0kg} \\ &= (1.38, .14, -137.93)ms^{-2}\end{aligned}$$

QUESTION 27.9 (9, 16, 70)

Roots to the equation

$$9 \times x^2 - 108 \times x - 2925 = 0$$

are 25 and -13 .

Let us verity 25 first: $9 \times x^2 - 108 \times x - 2925 = 5625 + (-2700) + (-2925) = 2925 + (-2925) = 0$

Then verity -13: $9 \times x^2 - 108 \times x - 2925 = 1521 + (1404) + (-2925) = 2925 + (-2925) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 27.1 through 27.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 28

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 28.1 through 28.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 28.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 28.1.1 through 28.1.6).

Question 28.1.1 (6, 11, 26)

Since the possiblity of smoking customer is $a = .580$, and the possiblity of under 30 years old customer is $b = .6200$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .580 = .420$ and the possiblity of equal or above 30 years old customer is $d = 1.0 - b = 1.0 - .6200 = .3800$. So the possibility of non-smoking and equal or above 30 years old customer is $c \times d = .160$.

Question 28.1.2 (6, 7, 22)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.0, 4.0, -6000.0)N$ and $m = 58.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(80.0, 4.0, -6000.0)N}{58.0kg} \\ &= (1.3793, 6.8966 \times 10^{-2}, -103.45)ms^{-2} \\ &= (17876., 893.79, -1.3407 \times 10^{6})km/h^2.\end{aligned}$$

Question 28.1.3 (6, 10, 25)

Question 28.1.4 (6, 6, 21)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (70.0, 4.0, -9000.0)N$ and $m = 56.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(70.0, 4.0, -9000.0)N}{56.0kg} \\ &= (1.2500, 7.1429 \times 10^{-2}, -160.71)ms^{-2} \\ &= (16200., 925.71, -2.0829 \times 10^{6})km/h^2.\end{aligned}$$

Question 28.1.5 (6, 12, 27)

Since the possiblity of smoking customer is $a = .120$, and the possiblity of equal-or-above 30 years old customer is $b = .7000$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .120 = .880$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .7000 = .3000$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.120 \times .7000 = 8.40 \times 10^{-2}$
smoking and under 30 years old	$.120 \times .3000 = 3.60 \times 10^{-2}$
non-smoking and equal-or-above 30 years old	$.880 \times .7000 = .616$
non-smoking and under 30 years old	$.880 \times .3000 = .264$

And the total summation of all possibilities is 1.000.

Question 28.1.6 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$5.00000000 \times 10^{24}$	$2.000000000 \times 10^{24}$	7.50×10^{-10}
Venus	6.00×10^{24}	4.00×10^{24}	2.25×10^{-10}
Earth	7.00×10^{24}	5.00×10^{24}	1.68×10^{-10}
Mars	7.00×10^{24}	7.00×10^{24}	8.58×10^{-11}
Jupiter	5.00×10^{24}	3.00×10^{24}	3.33×10^{-10}
Saturn	7.00×10^{24}	6.00×10^{24}	1.17×10^{-10}
Uranus	9.00×10^{24}	6.00×10^{24}	1.50×10^{-10}
Neptune	5.00×10^{24}	7.00×10^{24}	6.13×10^{-11}

QUESTION 28.2 (5, 5, 5)

QUESTION 28.3 (3, 3, 3)

QUESTION 28.4 (4, 4, 4)

QUESTION 28.5 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 4.0, -3000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 4.0, -3000.0)N}{50.0000kg} \\ &= (1.80, 8.0 \times 10^{-2}, -60.000)ms^{-2}\end{aligned}$$

QUESTION 28.6 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.000, 7.0000, -8000.0)N$ and $m = 54.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.000, 7.0000, -8000.0)N}{54.0000kg} \\ &= (1.6667, .12963, -148.15)ms^{-2} \\ &= (21600., 1680.0, -1.9200 \times 10^{6})km/h^2.\end{aligned}$$

QUESTION 28.7 (8, 15, 60)

QUESTION 28.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.0, 5.0, -9000.0)N$ and $m = 50.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(80.0, 5.0, -9000.0)N}{50.0kg} \\ &= (1.60, .10, -180.00)ms^{-2}\end{aligned}$$

QUESTION 28.9 (9, 16, 70)

Roots to the equation

$$15 \times x^2 + 210 \times x - 7905 = 0$$

are 17 and -31 .

Let us verity 17 first: $15 \times x^2 + 210 \times x - 7905 = 4335 + (3570) + (-7905) = 7905 + (-7905) = 0$

Then verity -31: $15 \times x^2 + 210 \times x - 7905 = 14415 + (-6510) + (-7905) = 7905 + (-7905) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 28.1 through 28.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 29

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 29.1 through 29.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 29.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 29.1.1 through 29.1.6).

Question 29.1.1 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (20.0, 5.0, -9000.0)N$ and $m = 50.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(20.0, 5.0, -9000.0)N}{50.0kg} \\ &= (.40000, .10000, -180.00)ms^{-2} \\ &= (5184.0, 1296.0, -2.3328 \times 10^6)km/h^2. \end{aligned}$$

Question 29.1.2 (6, 11, 26)

Since the possiblity of smoking customer is $a = .660$, and the possiblity of equal or above 30 years old customer is $b = .4000$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .660 = .340$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .4000 = .6000$. So the possibility of non-smoking and under 30 years old customer is $c \times d = .204$.

Question 29.1.3 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$3.00000000 \times 10^{24}$	$8.000000000 \times 10^{24}$	2.50×10^{-11}
Venus	6.00×10^{24}	9.00×10^{24}	3.95×10^{-11}
Earth	7.00×10^{24}	4.00×10^{24}	2.33×10^{-10}
Mars	6.00×10^{24}	2.00×10^{24}	8.00×10^{-10}
Jupiter	9.00×10^{24}	3.00×10^{24}	5.34×10^{-10}
Saturn	4.00×10^{24}	8.00×10^{24}	3.33×10^{-11}
Uranus	4.00×10^{24}	6.00×10^{24}	5.93×10^{-11}
Neptune	9.00×10^{24}	3.00×10^{24}	5.34×10^{-10}

Question 29.1.4 (6, 13, 28)

Question 29.1.5 (6, 12, 27)

Since the possiblity of smoking customer is $a = .790$, and the possiblity of equal-or-above 30 years old customer is $b = .6200$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .790 = .210$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .6200 = .3800$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.790 \times .6200 = .490$
smoking and under 30 years old	$.790 \times .3800 = .300$
non-smoking and equal-or-above 30 years old	$.210 \times .6200 = .130$
non-smoking and under 30 years old	$.210 \times .3800 = 7.98 \times 10^{-2}$

And the total summation of all possibilities is 1.000.

Question 29.1.6 (6, 7, 22)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (30.0, 3.0, -2000.0)N$ and $m = 52.0kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(30.0, 3.0, -2000.0)N}{52.0kg} \\
&= (.57692, 5.7692 \times 10^{-2}, -38.462)ms^{-2} \\
&= (7476.9, 747.69, -498462.)km/h^2.
\end{aligned}$$

QUESTION 29.2 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (30.000, 3.0000, -6000.0)N$ and $m = 54.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(30.000, 3.0000, -6000.0)N}{54.0000kg} \\
&= (.55556, 5.5556 \times 10^{-2}, -111.11)ms^{-2} \\
&= (7200.0, 720.00, -1.4400 \times 10^{6})km/h^2.
\end{aligned}$$

QUESTION 29.3 (3, 3, 3)

QUESTION 29.4 (5, 5, 5)

QUESTION 29.5 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (40.0, 7.0, -5000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(40.0, 7.0, -5000.0)N}{50.0000kg} \\ &= (.800, .14, -100.00)ms^{-2} \end{aligned}$$

QUESTION 29.6 (4, 4, 4)

QUESTION 29.7 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.0, 10.0, -3000.0)N$ and $m = 52.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(80.0, 10.0, -3000.0)N}{52.0kg} \\ &= (1.54, .19, -57.692)ms^{-2} \end{aligned}$$

QUESTION 29.8 (8, 15, 60)

QUESTION 29.9 (9, 16, 70)

Roots to the equation

$$-15 \times x^2 + 210 \times x + 2205 = 0$$

are 21 and -7 .

Let us verity 21 first: $-15\times x^2+210\times x+2205 = -6615+(4410)+(2205) = -2205 + (2205) = 0$

Then verity -7: $-15 \times x^2 + 210 \times x + 2205 = -735 + (-1470) + (2205) = -2205 + (2205) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 29.1 through 29.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 30

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 30.1 through 30.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 30.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 30.1.1 through 30.1.6).

Question 30.1.1 (6, 11, 26)

Since the possiblity of smoking customer is $a = .150$, and the possiblity of equal or above 30 years old customer is $b = .3600$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .150 = .850$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .3600 = .6400$. So the possibility of non-smoking and under 30 years old customer is $c \times d = .544$.

Question 30.1.2 (6, 6, 21)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 4.0, -8000.0)N$ and $m = 56.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 4.0, -8000.0)N}{56.0kg} \\ &= (1.6071, 7.1429 \times 10^{-2}, -142.86)ms^{-2} \\ &= (20829., 925.71, -1.8514 \times 10^{6})km/h^2.\end{aligned}$$

Question 30.1.3 (6, 12, 27)

Since the possiblity of smoking customer is $a = .520$, and the possiblity of equal-or-above 30 years old customer is $b = .2600$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .520 = .480$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .2600 = .7400$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.520 \times .2600 = .135$
smoking and under 30 years old	$.520 \times .7400 = .385$
non-smoking and equal-or-above 30 years old	$.480 \times .2600 = .125$
non-smoking and under 30 years old	$.480 \times .7400 = .355$

And the total summation of all possibilities is 1.000.

Question 30.1.4 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.0, 7.0, -5000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(50.0, 7.0, -5000.0)N}{54.0kg} \\ &= (.92593, .12963, -92.593)ms^{-2} \\ &= (12000., 1680.0, -1.2000 \times 10^{6})km/h^2.\end{aligned}$$

Question 30.1.5 (6, 10, 25)

Question 30.1.6 (6, 13, 28)

QUESTION 30.2 (4, 4, 4)

QUESTION 30.3 (3, 3, 3)

QUESTION 30.4 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (30.0, 8.0, -7000.0)N$ and $m = 56.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(30.0, 8.0, -7000.0)N}{56.0000kg} \\ &= (.536, .14, -125.00)ms^{-2} \end{aligned}$$

QUESTION 30.5 (5, 5, 5)

QUESTION 30.6 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (80.000, 5.0000, -9000.0)N$ and $m = 54.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(80.000, 5.0000, -9000.0)N}{54.0000kg} \\ &= (1.4815, 9.2593 \times 10^{-2}, -166.67)ms^{-2} \\ &= (19200., 1200.0, -2.1600 \times 10^{6})km/h^2. \end{aligned}$$

QUESTION 30.7 (8, 15, 60)

QUESTION 30.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 2.0, -6000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 2.0, -6000.0)N}{54.0kg} \\ &= (1.67, 3.7 \times 10^{-2}, -111.11)ms^{-2} \end{aligned}$$

QUESTION 30.9 (9, 16, 70)

Roots to the equation

$$-15 \times x^2 - 30 \times x + 525 = 0$$

are 5 and -7 .

Let us verity 5 first: $-15 \times x^2 - 30 \times x + 525 = -375 + (-150) + (525) = -525 + (525) = 0$

Then verity -7: $-15 \times x^2 - 30 \times x + 525 = -735 + (210) + (525) = -525 + (525) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 30.1 through 30.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 31

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 31.1 through 31.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 31.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 31.1.1 through 31.1.6).

Question 31.1.1 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$7.00000000 \times 10^{24}$	$5.000000000 \times 10^{24}$	9.34×10^{-11}
Venus	2.00×10^{24}	6.00×10^{24}	1.85×10^{-11}
Earth	9.00×10^{24}	6.00×10^{24}	8.34×10^{-11}
Mars	2.00×10^{24}	5.00×10^{24}	2.67×10^{-11}
Jupiter	5.00×10^{24}	5.00×10^{24}	6.67×10^{-11}
Saturn	4.00×10^{24}	2.00×10^{24}	3.33×10^{-10}
Uranus	7.00×10^{24}	2.00×10^{24}	5.84×10^{-10}
Neptune	4.00×10^{24}	4.00×10^{24}	8.34×10^{-11}

Question 31.1.2 (6, 13, 28)

Question 31.1.3 (6, 11, 26)

Since the possiblity of smoking customer is $a = .970$, and the possiblity of equal or above 30 years old customer is $b = 6.00 \times 10^{-2}$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .970 = 3.00 \times 10^{-2}$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - 6.00 \times 10^{-2} = .9400$. So the possibility of non-smoking and under 30 years old customer is $c \times d = 2.82 \times 10^{-2}$.

Question 31.1.4 (6, 7, 22)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (40.0, 8.0, -2000.0)N$ and $m = 58.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(40.0, 8.0, -2000.0)N}{58.0kg} \\ &= (.68966, .13793, -34.483)ms^{-2} \\ &= (8937.9, 1787.6, -446897.)km/h^2. \end{aligned}$$

Question 31.1.5 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 9.0, -3000.0)N$ and $m = 52.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 9.0, -3000.0)N}{52.0kg} \\ &= (1.7308, .17308, -57.692)ms^{-2} \\ &= (22431., 2243.1, -747692.)km/h^2. \end{aligned}$$

Question 31.1.6 (6, 12, 27)

Since the possiblity of smoking customer is $a = .470$, and the possiblity of equal-or-above 30 years old customer is $b = .1600$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .470 = .530$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .1600 = .8400$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.470 \times .1600 = 7.52 \times 10^{-2}$
smoking and under 30 years old	$.470 \times .8400 = .395$
non-smoking and equal-or-above 30 years old	$.530 \times .1600 = 8.48 \times 10^{-2}$
non-smoking and under 30 years old	$.530 \times .8400 = .445$

And the total summation of all possibilities is 1.000.

QUESTION 31.2 (3, 3, 3)

QUESTION 31.3 (4, 4, 4)

QUESTION 31.4 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (60.000, 5.0000, -6000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(60.000, 5.0000, -6000.0)N}{50.0000kg} \\ &= (1.2000, .10000, -120.00)ms^{-2} \\ &= (15552., 1296.0, -1.5552 \times 10^6)km/h^2. \end{aligned}$$

QUESTION 31.5 (5, 5, 5)

QUESTION 31.6 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.0, 5.0, -9000.0)N$ and $m = 56.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(50.0, 5.0, -9000.0)N}{56.0000kg} \\ &= (.893, 8.9 \times 10^{-2}, -160.71)ms^{-2} \end{aligned}$$

QUESTION 31.7 (8, 15, 60)

QUESTION 31.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.0, 5.0, -3000.0)N$ and $m = 58.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(50.0, 5.0, -3000.0)N}{58.0kg} \\ &= (.862, 8.6 \times 10^{-2}, -51.724)ms^{-2} \end{aligned}$$

QUESTION 31.9 (9, 16, 70)

Roots to the equation

$$9 \times x^2 + 72 \times x + 63 = 0$$

are -7 and -1 .

Let us verity -7 first: $9 \times x^2 + 72 \times x + 63 = 441 + (-504) + (63) = -63 + (63) = 0$

Then verity -1: $9 \times x^2 + 72 \times x + 63 = 9 + (-72) + (63) = -63 + (63) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 31.1 through 31.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 32

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 32.1 through 32.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 32.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 32.1.1 through 32.1.6).

Question 32.1.1 (6, 12, 27)

Since the possiblity of non-smoking customer is $a = .460$, and the possiblity of equal-or-above 30 years old customer is $b = .7000$, the possiblity of smoking customer is $c = 1.0 - a = 1.0 - .460 = .540$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .7000 = .3000$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.540 \times .7000 = .378$
smoking and under 30 years old	$.540 \times .3000 = .162$
non-smoking and equal-or-above 30 years old	$.460 \times .7000 = .322$
non-smoking and under 30 years old	$.460 \times .3000 = .138$

And the total summation of all possibilities is 1.000.

Question 32.1.2 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 5.0, -5000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 5.0, -5000.0)N}{54.0kg} \\ &= (1.6667, 9.2593 \times 10^{-2}, -92.593)ms^{-2} \\ &= (21600., 1200.0, -1.2000 \times 10^{6})km/h^2.\end{aligned}$$

Question 32.1.3 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$2.00000000 \times 10^{24}$	$6.000000000 \times 10^{24}$	2.59×10^{-11}
Venus	6.00×10^{24}	3.00×10^{24}	3.11×10^{-10}
Earth	8.00×10^{24}	5.00×10^{24}	1.49×10^{-10}
Mars	5.00×10^{24}	2.00×10^{24}	5.84×10^{-10}
Jupiter	3.00×10^{24}	9.00×10^{24}	1.73×10^{-11}
Saturn	8.00×10^{24}	9.00×10^{24}	4.61×10^{-11}
Uranus	5.00×10^{24}	4.00×10^{24}	1.46×10^{-10}
Neptune	3.00×10^{24}	8.00×10^{24}	2.19×10^{-11}

Question 32.1.4 (6, 7, 22)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.0, 7.0, -6000.0)N$ and $m = 50.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(50.0, 7.0, -6000.0)N}{50.0kg} \\ &= (1.0000, .14000, -120.00)ms^{-2} \\ &= (12960., 1814.4, -1.5552 \times 10^6)km/h^2.\end{aligned}$$

Question 32.1.5 (6, 10, 25)

Question 32.1.6 (6, 6, 21)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.0, 5.0, -3000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(50.0, 5.0, -3000.0)N}{54.0kg} \\ &= (.92593, 9.2593 \times 10^{-2}, -55.556)ms^{-2} \\ &= (12000., 1200.0, -720000.)km/h^2.\end{aligned}$$

QUESTION 32.2 (5, 5, 5)

QUESTION 32.3 (4, 4, 4)

QUESTION 32.4 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (20.000, 10.0000, -9000.0)N$ and $m = 58.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(20.000, 10.0000, -9000.0)N}{58.0000kg} \\
&= (.34483, .17241, -155.17)ms^{-2} \\
&= (4469.0, 2234.5, -2.0110 \times 10^6)km/h^2.
\end{aligned}$$

QUESTION 32.5 (3, 3, 3)

QUESTION 32.6 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (40.0, 8.0, -6000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(40.0, 8.0, -6000.0)N}{50.0000kg} \\
&= (.800, .16, -120.00)ms^{-2}
\end{aligned}$$

QUESTION 32.7 (8, 15, 60)

QUESTION 32.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (70.0, 6.0, -5000.0)N$ and $m = 58.0kg$, bring them into the above equation, then we get

$$\begin{aligned}\mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(70.0, 6.0, -5000.0)N}{58.0kg} \\ &= (1.21, .10, -86.207)ms^{-2}\end{aligned}$$

QUESTION 32.9 (9, 16, 70)

Roots to the equation

$$1 \times x^2 - 2 \times x - 15 = 0$$

are -3 and 5 .

Let us verity -3 first: $1 \times x^2 - 2 \times x - 15 = 9 + (6) + (-15) = 15 + (-15) = 0$
Then verity 5: $1 \times x^2 - 2 \times x - 15 = 25 + (-10) + (-15) = 15 + (-15) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 32.1 through 32.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

*** END OF PAPER, THANKS ***

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR
PAPER NUMBER 33

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 33.1 through 33.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 33.1 (6)
Please answer ONLY 5 of the following 6 questions (Questions 33.1.1 through 33.1.6).

Question 33.1.1 (6, 12, 27)

Since the possiblity of smoking customer is $a = .440$, and the possiblity of under 30 years old customer is $b = 2.00 \times 10^{-2}$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .440 = .560$ and the possiblity of equal-or-above 30 years old customer is $d = 1.0 - b = 1.0 - 2.00 \times 10^{-2} = .9800$. Then

Customer	Possibility
smoking and equal-or-above 30 years old	$.440 \times .9800 = .431$
smoking and under 30 years old	$.440 \times 2.000 \times 10^{-2} = 8.80 \times 10^{-3}$
non-smoking and equal-or-above 30 years old	$.560 \times .9800 = .549$
non-smoking and under 30 years old	$.560 \times 2.000 \times 10^{-2} = 1.12 \times 10^{-2}$

And the total summation of all possibilities is 1.0000.

Question 33.1.2 (6, 11, 26)

Since the possiblity of smoking customer is $a = .810$, and the possiblity of equal or above 30 years old customer is $b = .5200$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .810 = .190$ and the possiblity of under 30 years old customer is $d = 1.0 - b = 1.0 - .5200 = .4800$. So the possibility of non-smoking and under 30 years old customer is $c \times d = 9.12 \times 10^{-2}$.

Question 33.1.3 (6, 13, 28)

Question 33.1.4 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$3.00000000 \times 10^{24}$	$2.000000000 \times 10^{24}$	1.00×10^{-10}
Venus	7.00×10^{24}	5.00×10^{24}	3.74×10^{-11}
Earth	7.00×10^{24}	9.00×10^{24}	1.15×10^{-11}
Mars	6.00×10^{24}	5.00×10^{24}	3.20×10^{-11}
Jupiter	6.00×10^{24}	4.00×10^{24}	5.00×10^{-11}
Saturn	7.00×10^{24}	7.00×10^{24}	1.91×10^{-11}
Uranus	8.00×10^{24}	5.00×10^{24}	4.27×10^{-11}
Neptune	5.00×10^{24}	5.00×10^{24}	2.67×10^{-11}

Question 33.1.5 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (70.0, 9.0, -8000.0)N$ and $m = 50.0kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(70.0, 9.0, -8000.0)N}{50.0kg} \\
&= (1.4000, .18000, -160.00)ms^{-2} \\
&= (18144., 2332.8, -2.0736 \times 10^6)km/h^2.
\end{aligned}$$

Question 33.1.6 (6, 10, 25)

QUESTION 33.2 (3, 3, 3)

QUESTION 33.3 (5, 5, 5)

QUESTION 33.4 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (20.0, 9.0, -4000.0)N$ and $m = 52.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(20.0, 9.0, -4000.0)N}{52.0000kg} \\ &= (.385, .17, -76.923)ms^{-2} \end{aligned}$$

QUESTION 33.5 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (100.000, 2.0000, -9000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(100.000, 2.0000, -9000.0)N}{50.0000kg} \\ &= (2.0000, 4.0000 \times 10^{-2}, -180.00)ms^{-2} \\ &= (25920., 518.40, -2.3328 \times 10^{6})km/h^2. \end{aligned}$$

QUESTION 33.6 (4, 4, 4)

QUESTION 33.7 (8, 15, 60)

QUESTION 33.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (20.0, 4.0, -3000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(20.0, 4.0, -3000.0)N}{54.0kg} \\ &= (.370, 7.4 \times 10^{-2}, -55.556)ms^{-2} \end{aligned}$$

QUESTION 33.9 (9, 16, 70)

Roots to the equation

$$3 \times x^2 + 30 \times x - 513 = 0$$

are 9 and -19 .

Let us verity 9 first: $3 \times x^2 + 30 \times x - 513 = 243 + (270) + (-513) = 513 + (-513) = 0$

Then verity -19: $3 \times x^2 + 30 \times x - 513 = 1083 + (-570) + (-513) = 513 + (-513) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 33.1 through 33.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

THIS IS THE SOLUTIONS FOR PAPER NUMBER 34

THIS IS AN EXAMPLE OF PERSONALIZED TESTS.

If needed, please use the following constants.

Please be advised that in this paper there are questions from 34.1 through 34.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

QUESTION 34.1 (6)

Please answer ONLY 5 of the following 6 questions (Questions 34.1.1 through 34.1.6).

Question 34.1.1 (6, 8, 23)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (70.0, 2.0, -2000.0)N$ and $m = 52.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(70.0, 2.0, -2000.0)N}{52.0kg} \\ &= (1.3462, 3.8462 \times 10^{-2}, -38.462)ms^{-2} \\ &= (17446., 498.46, -498462.)km/h^2. \end{aligned}$$

Question 34.1.2 (6, 9, 24)

By using Newton's Law of Universal Gravitation:

$$F = G\frac{(Sun's\ \ mass) \times (Planet's\ \ mass)}{(distance)^2},$$

where $G = 6.67 \times 10^{-11} Nm^2(kg)^{-2}$, the forces can be easily calculated as

The Planet	Mass (kg)	Distanace from Sun (m)	The Force (N)
Mercury	$7.00000000 \times 10^{24}$	$8.000000000 \times 10^{24}$	4.38×10^{-11}
Venus	4.00×10^{24}	6.00×10^{24}	4.45×10^{-11}
Earth	5.00×10^{24}	7.00×10^{24}	4.08×10^{-11}
Mars	6.00×10^{24}	7.00×10^{24}	4.90×10^{-11}
Jupiter	4.00×10^{24}	4.00×10^{24}	1.00×10^{-10}
Saturn	4.00×10^{24}	7.00×10^{24}	3.27×10^{-11}
Uranus	3.00×10^{24}	3.00×10^{24}	1.33×10^{-10}
Neptune	7.00×10^{24}	3.00×10^{24}	3.11×10^{-10}

Question 34.1.3 (6, 7, 22)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (30.0, 8.0, -8000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned}
\mathbf{a} &= \frac{\mathbf{f}}{m} \\
&= \frac{(30.0, 8.0, -8000.0)N}{54.0kg} \\
&= (.55556, .14815, -148.15)ms^{-2} \\
&= (7200.0, 1920.0, -1.9200 \times 10^6)km/h^2.
\end{aligned}$$

Question 34.1.4 (6, 11, 26)

Since the possiblity of smoking customer is $a = .130$, and the possiblity of under 30 years old customer is $b = .9200$, the possiblity of non-smoking customer is $c = 1.0 - a = 1.0 - .130 = .870$ and the possiblity of equal or above 30 years old customer is $d = 1.0 - b = 1.0 - .9200 = 8.000 \times 10^{-2}$. So

the possibility of non-smoking and equal or above 30 years old customer is $c \times d = 6.96 \times 10^{-2}$.

Question 34.1.5 (6, 6, 21)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (20.0, 3.0, -6000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(20.0, 3.0, -6000.0)N}{54.0kg} \\ &= (.37037, 5.5556 \times 10^{-2}, -111.11)ms^{-2} \\ &= (4800.0, 720.00, -1.4400 \times 10^{6})km/h^2. \end{aligned}$$

Question 34.1.6 (6, 10, 25)

QUESTION 34.2 (2, 2, 2)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (50.000, 6.0000, -5000.0)N$ and $m = 50.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(50.000, 6.0000, -5000.0)N}{50.0000kg} \\ &= (1.0000, .12000, -100.00)ms^{-2} \\ &= (12960., 1555.2, -1.2960 \times 10^{6})km/h^2. \end{aligned}$$

QUESTION 34.3 (1, 1, 1)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (40.0, 10.0, -8000.0)N$ and $m = 56.0000kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(40.0, 10.0, -8000.0)N}{56.0000kg} \\ &= (.714, .18, -142.86)ms^{-2} \end{aligned}$$

QUESTION 34.4 (3, 3, 3)

QUESTION 34.5 (5, 5, 5)

QUESTION 34.6 (4, 4, 4)

QUESTION 34.7 (8, 15, 60)

QUESTION 34.8 (7, 14, 50)

We will use the Newton's Second Law:

$$\mathbf{f} = m\mathbf{a}.$$

Since $\mathbf{f} = (90.0, 9.0, -4000.0)N$ and $m = 54.0kg$, bring them into the above equation, then we get

$$\begin{aligned} \mathbf{a} &= \frac{\mathbf{f}}{m} \\ &= \frac{(90.0, 9.0, -4000.0)N}{54.0kg} \\ &= (1.67, .17, -74.074)ms^{-2} \end{aligned}$$

QUESTION 34.9 (9, 16, 70)

Roots to the equation

$$-5 \times x^2 + 205 \times x - 2100 = 0$$

are 21 and 20 .

Let us verity 21 first: $-5 \times x^2 + 205 \times x - 2100 = -2205 + (4305) + (-2100) = 2100 + (-2100) = 0$

Then verity 20: $-5 \times x^2 + 205 \times x - 2100 = -2000 + (4100) + (-2100) = 2100 + (-2100) = 0$

Here are still some constants for use:

Thank you very much for answering these questions!

Please be advised that in this paper there are questions from 34.1 through 34.9. And any one of them may contain more than one sub-question, thus the total number of sub-questions here is around 14, of which 13 should be answered.

***** END OF PAPER, THANKS *****

By: 239(26, 34)

STATISTICS

Initial seed for random numbers	239
First paper number	26
Last paper number	34
Total papers to be generated	9
Total marks from input file	100.00
Total actual marks	100.00
Total lines of the input file	915
Total QUESTIONs in input file	16
Total CHOOSEs in input file	1
Total NOTEs in input file	2
Total (big) questions in each paper	9
Total actual (sub)questions in each paper	14
Total (sub)questions to be answered in each paper	13

For each big question

Big question	Choose?	Questions needed	Questions from	Question IDs
1(4,3.13)	No	1(1, 1)	1(1 ,3.13 ,10.00)	1
2(4,1.56)	No	1(1, 1)	2(0 ,1.56 ,5.00)	2
3(4,1.56)	No	1(1, 1)	3(1 ,1.56 ,5.00)	3
4(4,3.13)	No	1(1, 1)	4(0 ,3.13 ,10.00)	4
5(4,1.56)	No	1(1, 1)	5(0 ,1.56 ,5.00)	5
6(2,62.50 ,40.00)	1	6(5, 8)	6(0 ,12.50 ,5.00) 7(0 ,12.50 ,5.00) 8(0 ,12.50 ,6.00) 9(0 ,12.50 ,8.00) 10(1 ,12.50 ,5.70) 11(0 ,12.50 ,12.40) 12(0 ,12.50 ,24.50)	21 22 23 24 25 26 27

Big question	Choose?	Questions needed	Questions from	Question IDs
			13(0 ,12.50 ,67.20)	28
7(8,12.50)	No	1(1, 1)	14(1 ,12.50 ,40.00)	50
8(8,12.50)	No	1(1, 1)	15(0 ,12.50 ,40.00)	60
9(14,1.56)	No	1(1, 1)	16(0 ,1.56 ,5.00)	70