SOLUTION OF STATICS 6TH EDITION

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Problem 1: Determine the resultant force acting on the bracket shown below.

[Image of a bracket with forces acting on it]

Solution: The resultant force is given by the sum of the forces in the x and y directions:

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Rx = F1 + F2 = 100 N + 200 N = 300 N
Ry = F3 – F4 = 150 N – 50 N = 100 N
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Therefore, the resultant force is:

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R = ?(Rx² + Ry²) = ?(300² + 100²) = 316.2 N
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Problem 2: Find the moment of the force F about point A.

[Image of a beam with a force acting on it]

Solution: The moment of a force about a point is given by the product of the force and the perpendicular distance from the point to the line of action of the force. In this case, the perpendicular distance is d, and the moment is:

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M = Fd = 200 N * 4 m = 800 Nm
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Problem 3: Determine the reactions at supports A and B of the beam shown below.

[Image of a beam with supports at A and B]

Solution: The reactions at the supports must balance the forces acting on the beam. Taking moments about point A gives:

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R_B * 5 m = 100 N * 2 m
R_B = 40 N
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Taking forces in the vertical direction gives:

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R_A + R_B = 100 N
R_A = 60 N
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Problem 4: Find the stresses in members AB, BC, and CD of the truss shown below.

[Image of a truss with members AB, BC, and CD]

Solution: The stresses in the members can be determined using the method of sections. By cutting the truss at sections AA, BB, and CC, we can isolate each member and determine the forces acting on it. The stresses are then given by:

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?_AB = F_AB / A_AB
?_BC = F_BC / A_BC
?_CD = F_CD / A_CD
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where F is the force in the member, and A is the cross-sectional area of the member.

Problem 5: Determine the natural frequency of vibration of the system shown below.

[Image of a mass attached to a spring]

Solution: The natural frequency of vibration is given by:

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? = ?(k / m)
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where k is the spring constant and m is the mass. In this case, k = 100 N/m and m = 2 kg, so:

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? = ?(100 N/m / 2 kg) = 7.07 Hz
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Tennis Shoes Among the Nephites?

By Chris Heimerdinger

Question: Is it possible that the ancient Nephites wore tennis shoes?

Answer: While there is no direct evidence to support this claim, some scholars have suggested that certain passages in the Book of Mormon could be interpreted to suggest that the Nephites may have had access to shoes made of a material similar to rubber or leather.

Question: What specific passages have been cited in support of this theory?

Answer: One passage often mentioned is found in Alma 43:18-19, which describes the Nephites wearing "shoes of a curious workmanship." Another passage is found in Helaman 3:24, which mentions "shoes of fine leather." While these passages do not explicitly mention tennis shoes, some scholars believe they could be referring to shoes made of a relatively advanced material.

Question: Is there any archaeological evidence to support this theory?

Answer: No archaeological evidence has been found to definitively prove that the Nephites wore tennis shoes. However, some scholars have noted that the use of leather by the Nephites is well-documented, and it is possible that they may have developed a method for treating leather to make it more durable and comfortable.

Question: What are the implications of this theory?

Answer: If the Nephites did indeed wear tennis shoes, it would suggest that they had a level of technological advancement that has not been previously recognized. It could also provide insights into their trade networks and cultural influences.

Conclusion:

While the evidence for the existence of tennis shoes among the Nephites is inconclusive, it is a fascinating theory that has sparked debate among scholars. Further research and archaeological discoveries may help to shed light on this intriguing possibility.

The "H" Factor of Personality: Why Some People Are...

Q: What is the "H" factor of personality?

A: The "H" factor, or "Honesty-Humility", is one of the six core personality traits identified by the HEXACO model. It refers to an individual's tendency to be truthful, trustworthy, and modest. People with high H scores are reliable, ethical, and value fairness and equality.

Q: Why are some people more honest and humble than others?

A: The development of the H factor is influenced by a combination of genetic and environmental factors. Research suggests that people who grow up in supportive and trusting environments tend to develop higher H scores. Conversely, those exposed to early life adversity or harsh parenting may exhibit lower H.

Q: What are the benefits of having a high H score?

A: Individuals with high H scores are more likely to succeed in careers that require integrity, such as law, medicine, and education. They also tend to have strong relationships, as they are reliable and supportive partners. Additionally, people with high H may experience lower levels of stress and anxiety due to their moral alignment and ethical conduct.

Q: What are the challenges faced by people with low H scores?

A: Individuals with low H scores may find it difficult to maintain honest and ethical relationships. They may also be more likely to engage in deceptive behaviors, such as lying or cheating. Furthermore, they may experience feelings of shame and guilt due to their lack of integrity.

Q: Can the H factor be changed?

A: While the H factor is largely stable over time, it is possible to improve one's score through therapy or self-reflection. By recognizing the importance of honesty and humility, individuals can gradually cultivate these traits through practice and positive reinforcement.

Toronto to 1918: An Illustrated History

The recently published book "Toronto to 1918: An Illustrated History" by Christopher Armstrong and Michael Doucet provides a comprehensive and richly illustrated

account of Toronto's history from its founding to the end of World War I. The book is a valuable resource for anyone interested in the city's past, and it is filled with fascinating stories and images.

1. What was Toronto like in its early days?

Toronto was founded in 1793 by John Graves Simcoe, the first Lieutenant-Governor of Upper Canada. The city was originally called York, and it was a small military outpost with a population of just a few hundred people. In the early 1800s, York grew rapidly as settlers arrived from Europe and the United States. The city became a major center of trade and commerce, and it played an important role in the War of 1812.

2. How did Toronto grow and develop in the 19th century?

In the 19th century, Toronto underwent a period of rapid growth and development. The city's population increased from 9,000 in 1834 to over 200,000 in 1891. The city's economy diversified, and it became a major manufacturing center. Toronto was also a cultural hub, with a number of theaters, museums, and libraries.

3. What was life like in Toronto in the early 20th century?

The early 20th century was a time of great change for Toronto. The city's population continued to grow, and it became a major industrial center. Toronto was also a center of immigration, and people from all over the world came to the city to start new lives. The city's culture was also changing, and new forms of entertainment, such as movies and radio, became popular.

4. How did Toronto contribute to the First World War?

Toronto played a major role in the First World War. The city was a major center of recruitment, and over 60,000 Toronto residents served in the war. The city's factories also produced munitions and other supplies for the war effort. Toronto was also a major center of medical care for injured soldiers.

5. What was Toronto like after the First World War?

After the First World War, Toronto continued to grow and develop. The city's population increased to over 500,000 in 1921, and it became a major financial

center. Toronto was also a center of culture and entertainment, and it was home to a number of world-renowned artists and performers. The city continued to grow and develop throughout the 20th century, and it is now one of the largest and most vibrant cities in Canada.

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