

HOLY CHILD

EDUCATING YOUNG WOMEN OF CONSCIENCE AND ACTION

E.E. Ford Program in Architecture, Engineering & Design for the Common Good

Summer Assignments

#1: "10 Breakthrough Technologies 2018" from *MIT Technology Review*

March/April 2018: pages 36-71

(Article emailed to you April 26, 2018)

"Every year, MIT Technology Review selects the ten technologies they believe are the greatest breakthroughs of previous months, those that in the future will have the broadest impact on commerce, medicine, and society." Read about this year's selections and choose the **two** breakthrough technologies that are most exciting to you. In a short paper (~ 2 pages) describe each technology, tell why you find it exciting, and explain how it may spur innovations in another field.

#2: *Engineering and the Mind's Eye* by Eugene S. Ferguson: pages 1-40

(Article emailed to you April 26, 2018)

As Holy Child's signature STEAM program, the E.E. Ford Program in Architecture, Engineering & Design for the Common Good embraces the arts and architecture as well as science, technology, engineering and mathematics. We believe arts education is key to the creativity that drives the innovation necessary for new products and industries. To further explore the connection between engineering and the arts, read the excerpt from *Engineering and the Mind's Eye*. The phrase "mind's eye" refers to the human ability for visualization - our ability to form mental images or "see" things with the mind. In one paragraph (~ 6-8 sentences) answer the following question. What is non-verbal thinking and why is it important to engineering?

#3: *How Architecture Works* by Witold Rybczynski: pp 1-16 *(You must purchase book)*

Witold Rybczynski was born in Edinburgh, of Polish parentage, raised in London, and attended Jesuit schools in England and Canada. He studied architecture at McGill University in Montreal, where he also taught for twenty years. He is Emeritus Professor of Urbanism at the University of Pennsylvania. He has designed and built houses as a registered architect, and worked on low-cost housing in Mexico, Nigeria, India, the Philippines, and China. Read the Introduction of *How Architecture Works*, in which the author poses the question "why does the building touch us?" In one paragraph (~ 6-8 sentences) describe a situation where you've walked into a building and experienced an unexpected feeling of confusion or surprise, where something catches your breath. Do you think this was an intention of the architect? What were the factors that made you feel this way?

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#4: *To Engineer is Human* by Henry Petroski: pages 1-40 (You must purchase book)

Henry Petroski earned his bachelor's degree in Civil Engineering from Manhattan College in 1963 and his Ph.D. from the University of Illinois at Urbana-Champaign in 1968. He is currently a professor of Civil Engineering at Duke with a secondary appointment as a professor of history. Read the Preface and Chapters 1-3 of To Engineer is Human to answer three questions (~ 3-5 sentences each) from the list provided.

- 1) What is engineering?
- 2) What do engineers do?
- 3) What is the objective of engineering design?
- 4) What does the Code of Hammurabi have to do with engineering?
- 5) What are three examples of engineering failure?
- 6) Explain the tradeoff between cost and safety?
- 7) What do we learn in childhood about engineering?
- 8) What is a realistic goal for engineering design?
- 9) What is the message of Oliver Wendell Holmes' poem?

Written answers should be typed, Times New Roman 12 pt. font, 1 inch margins, 1.5 spacing
