

APRIL 2016

DR. Z's CORNER

***Conquering the FE & PE exams
Problems & Applications***

This Month's Problem Topics

- FE CIVIL Exam & Topics - Number of Questions
- Types of Calculators / For FE and PE Exams
- NSPE Code of Ethics / True and False Questions
- Technology Usage / Angle Computations
- Fluid Mechanics / Hydrostatic Pressure
- Statics / Shear and Moment Diagrams
- Dynamics / Rectilinear Motion
- Strength of Material / Deflections
- Strength of Material / Flexural Stresses
- Centroids & Moments of Inertia
- Structures / LRFD Factored Loads & Moments
- Structures / Design of Steel Tension Members
- Geotechnical / Wall Footings
- Geotechnical / Retaining Walls

FUNDAMENTALS OF ENGINEERING

CIVIL EXAM TOPICS

Computer-Based Test (CBT)

Total Number of Questions: 110

Time: 6 hours

The new Civil FE Computer-Based Test (CBT) consists of 110 multiple-choice questions (Each problem only one question) the examinee will have 6 hours to complete the test.

- **Mathematics (Approx. 9 questions*)**
- **Probability and Statistics (5 questions)**
- **Computational Tools (5 questions)**
- **Ethics and Professional Practice (5 questions)**
- **Engineering Economics (5 questions)**
- **Statics (9 questions)**
- **Dynamics (5 questions)**
- **Mechanics of Materials (9 questions)**
- **Civil Engineering Materials (5 questions)**
- **Fluid Mechanics (5 questions)**
- **Hydraulics and Hydrologic Systems (10 questions)**
- **Structural Analysis (8 questions)**
- **Structural Design (8 questions)**
- **Geotechnical Engineering (12 questions)**
- **Transportation Engineering (10 questions)**
- **Environmental Engineering (8 questions)**

* Here the number of questions are the average values taken from the NCEES Reference Handbook (Version 9.3 / Computer-Based Test)

TYPES OF CALCULATORS

ACCEPTABLE FOR USE IN FE / PE EXAMS

To protect the integrity of FE/PE exams, NCEES limits the types of calculators you may bring to exam sites. The only calculator models acceptable for use during the 2016 exams are as follows:

Casio: All fx-115 models. Any Casio calculator must contain fx-115 in its model name. Examples of acceptable Casio fx-115 models include (but are not limited to):

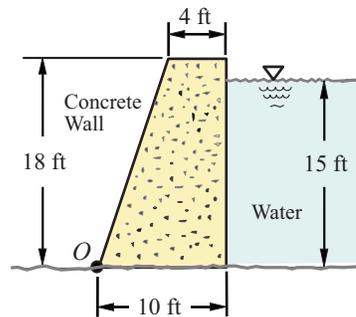
- fx-115 MS
- fx-115 MS Plus
- fx-115 MS SR
- fx-115 ES
- fx-115 ES Plus

Texas Instruments: All TI-30X and TI-36X models. Any Texas Instruments calculator must contain either TI-30X or TI-36X in its model name. Examples of acceptable TI-30X and TI-36X models include (but are not limited to):

- TI-30Xa
- TI-30Xa SOLAR
- TI-30Xa SE
- TI-30XS Multiview
- TI-30X IIB
- TI-30X IIS
- TI-36X II
- TI-36X SOLAR
- TI-36X Pro

Hewlett Packard: The HP 33s and HP 35s models, but no others.

CONCRETE GRAVITY WALL FLUID PRESSURE



Unit weights

$\gamma_{\text{con}} = 150 \text{ lb/ft}^3$
$\gamma_{\text{water}} = 62.4 \text{ lb/ft}^3$

FE/EIT
EXAM

Perpendicular wall dimension = 1 ft.

The trapezoidal concrete gravity wall is held in place by its own weight. Using the listed data, answer the following questions:

- (1) the magnitude of the resultant hydrostatic force (kips) acting on the wall is most nearly (assume width of the wall = 1 ft)
 - (A) 9.5
 - (B) 8.5
 - (C) 8.0
 - (D) 7.0

- (2) the overturning (tipping) moment (ft-kip) about A due to the water pressure (water height $h = 15 \text{ ft}$) is most nearly
 - (A) 43.2
 - (B) 40.5
 - (C) 35.1
 - (D) 32.6

- (3) the stabilizing moment (ft-kip) due to the weight of the wall
 - (A) 100.4
 - (B) 118.8
 - (C) 126.9
 - (D) 135.0

- (4) the factor of safety for tipping (overturning) is most nearly
 - (A) 4.06
 - (B) 3.79
 - (C) 3.38
 - (D) 2.65

Answers:

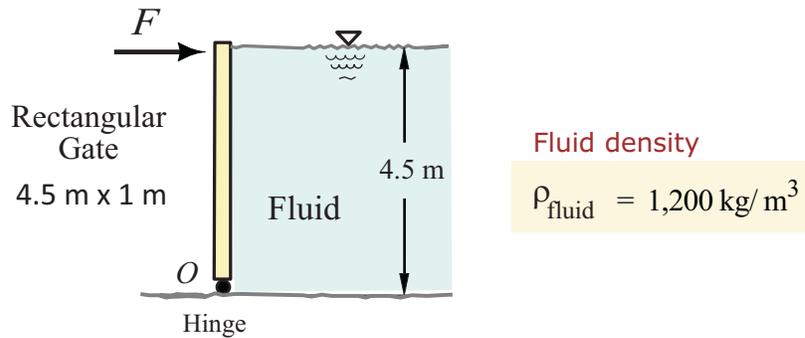
- | | |
|-----|---|
| (1) | D |
| (2) | C |
| (3) | B |
| (4) | C |

FUNDAMENTALS OF ENGINEERING

FLUID PRESSURE

Problem: (Hydrostatic fluid pressure)

FE/EIT
EXAM



Perpendicular gate dimension = 1.0 meter

A rectangular gate has a frictionless pin (hinge) as shown in the figure. Using the listed data for the gate dimensions and the density of the fluid, answer the following questions:

(1) the magnitude of the resultant hydrostatic force (kN) acting on the gate is most nearly (width of the gate = 1 m)

- (A) 85
- (B) 95
- (C) 100
- (D) 119

(2) the magnitude of the force F (kN) required to keep the gate closed is most nearly:

- (A) 35
- (B) 40
- (C) 57
- (D) 86

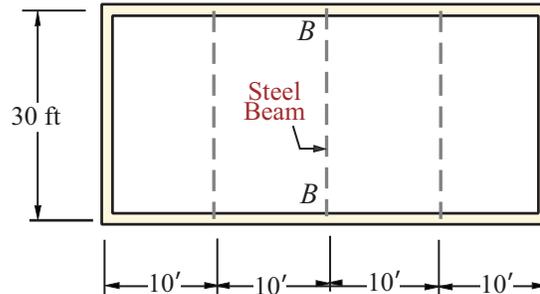
Answers:

- | | |
|-----|---|
| (1) | D |
| (2) | B |

DESIGN OF STEEL STRUCTURES

FACTORED LOADS (LRFD)

Problem:



PE
EXAM



Section (B-B)

ASTM
A36 Steel

Service Dead Load = 100 psf
Service Live Loads = 125 psf
Slab weight is included in dead loads

Dimensions of a light storage floor system are given as shown. Using the listed data for the loads and considering the beam *B-B* answer the following:

- (1) the magnitude of the factored load w_u (k/ft) acting on the beam is most nearly (disregard the weight of the beam).
 - (A) 1.5
 - (B) 2.5
 - (C) 3.2
 - (D) 5.0
- (2) the magnitude of the maximum factored moment (ft-kips) is most nearly:
 - (A) 443
 - (B) 280
 - (C) 360
 - (D) 125

Answers:

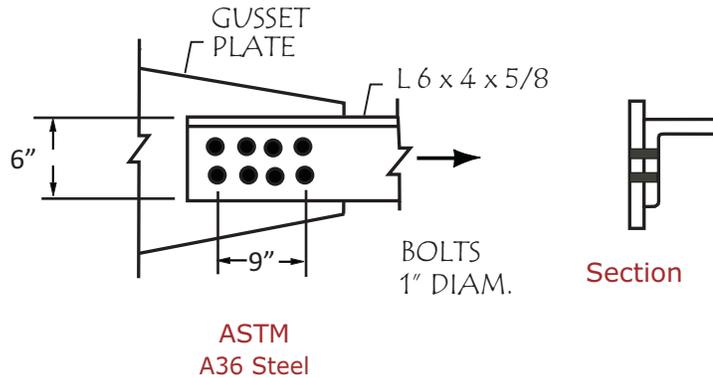
(1)	C
(2)	C

DESIGN OF STEEL STRUCTURES

TENSION MEMBERS

DESIGN STRENGTH (LRFD)

Problem:



FE/PE
EXAM

The detail of a steel tension member is given as shown in the figure. Using the listed data for bolts, geometry and steel grade, answer the following:

(1) the net area (A_{net}) of the cross-section (in^2) is most nearly:

- (A) 2.9
- (B) 3.8
- (C) 4.5
- (D) 5.0

(2) the effective net area ($U \cdot A_{net}$) (in^2) is most nearly:

- (A) 2.9
- (B) 3.9
- (C) 4.5
- (D) 5.0

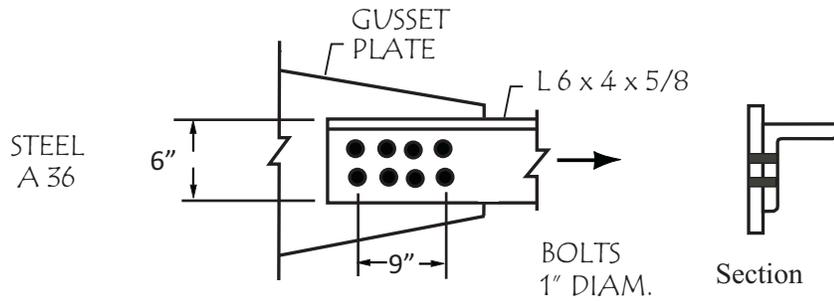
(3) the LRFD design strength (kips) is most nearly:

- (A) 59
- (B) 172
- (C) 235
- (D) 265



FULL SOLUTION

PROBLEM (Tension Members)



REVISED
FINAL
VERSION

Determine the tensile design strength.

Solution:

Yield stress and ultimate strength: (F_y, F_u)

A36 $\rightarrow F_y = 36 \text{ ksi}, F_u = 58 \text{ ksi}$

Gross cross sectional area for one angle: (A_g)

$A = A_{\text{gross}} = 5.86 \text{ in}^2$. (from the steel table)

The effective hole diameter: (d_{hole})

$d_{\text{hole}} = d_{\text{bolt}} + 1/8" = 1" + 1/8" = 1.125 \text{ in.}$

The net area for one angle: (A_{net})

$A_{\text{net}} = A_{\text{gross}} - A_{\text{hole}} = A_{\text{gross}} - 2 t_{\text{plate}} d_{\text{hole}}$
 $= 5.86 - 2(0.625)(1.125) = 4.4537 \text{ in}^2$.

The reduction factor: (U)

$U = 1 - \bar{x} / \bar{L} = 1 - 1.03 / 9 = 0.8856 < 0.90$ O.K.

The effective net area for one angle: (A_{net})

$A_{\text{eff}} = U A_{\text{net}} = (0.8856)(4.4537) = 3.944 \text{ in}^2$.

The design strength based on yielding or gross area: ($\phi_t P_n$)

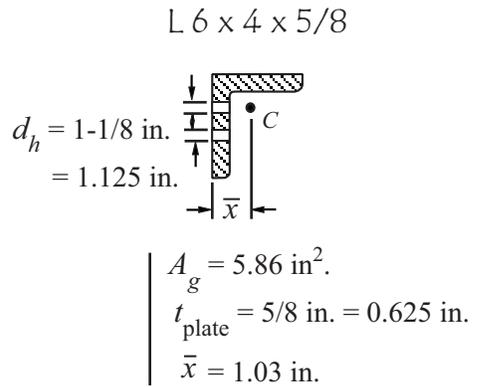
$\phi_t P_n = 0.90 F_y A_{\text{gross}} = 0.90 (36)(5.86) = 189.9 \text{ kips}$

The design strength based on fracture or effective area: ($\phi_t P_n$)

$\phi_t P_n = 0.75 F_u A_{\text{eff}} = 0.75 (58)(3.944) = 171.6 \text{ kips} \leftarrow$

The design strength is the smaller value.

$\phi_t P_n = 171.6 \text{ kips}$



$U = 1 - \frac{\bar{x}}{L}$

$U =$ Reduction Factor

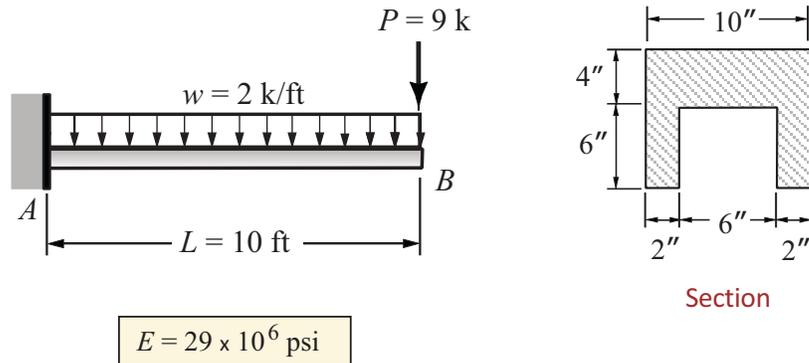
$\phi_t =$ Resistance Factor

$\phi_t = 0.90$ (for yielding)
 $\phi_t = 0.75$ (for fracture)

MECHANICS OF SOLIDS

BEAM DEFLECTIONS

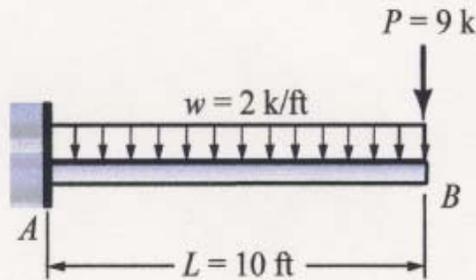
Problem: (Beam Deflections)



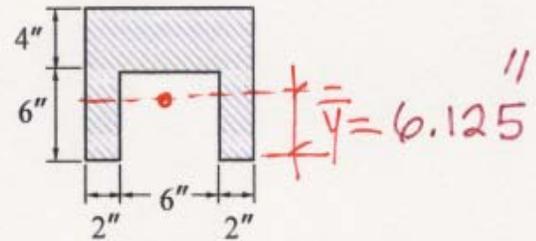
A cantilever beam is loaded as shown. The beam weight is included in the uniform load. Using the given cross-section and the modulus of elasticity answer the following questions:

- (1) the max. deflection (in.) of the beam is most nearly (δ_B)
 - (A) 0.5426
 - (B) 0.6550
 - (C) 0.0877
 - (D) 0.0915
- (2) the max. slope (rad.) at the free end is most nearly (θ_B)
 - (A) 0.02153
 - (B) 0.01554
 - (C) 0.00777
 - (D) 0.00655
- (3) the bending moment (k.ft) at the support is most nearly (M_A)
 - (A) 155
 - (B) 182
 - (C) 190
 - (D) 220

Problem: (Beam Deflections)



$E = 29 \times 10^6 \text{ psi}$



section

$I_{cx} = 500.33 \text{ in}^4$

A cantilever beam is loaded as shown. The beam weight is included in the uniform load. Using the given cross-section and the modulus of elasticity answer the following questions:

(1) the max. deflection (in.) of the beam is most nearly (δ_B)

- (A) 0.5426
- (B) 0.6550** ✓
- (C) 0.0877
- (D) 0.0915

$\delta_B = 0.65502 \text{ in}$ ✓

(2) the max. slope (rad.) at the free end is most nearly (θ_B)

- (A) 0.02153
- (B) 0.01554 ✓
- (C) 0.00777** ✓
- (D) 0.00655

$\theta_B = 0.00777 \text{ rad.}$ ✓

(3) the bending moment (k.ft) at the support is most nearly (M_A)

- (A) 155
- (B) 182
- (C) 190** ✓
- (D) 220

$M_A = 190 \text{ ft}\cdot\text{k}$ ✓

KINEMATICS OF A PARTICLE

RECTILINEAR MOTION



The van shown moves in a straight line such that for a short time its velocity is defined by $v = (6t^2 + 4t) \text{ ft/s}$. Knowing that t is measured in seconds, answer the following:

(1) The van's position (ft) in $t = 4$ seconds is most nearly

- (A) 75
- (B) 90
- (C) 150
- (D) 160

$$s = ?$$

(2) The van's acceleration (ft/s^2) in $t = 4$ seconds is most nearly

- (A) 35
- (B) 42
- (C) 52
- (D) 68

$$a = ?$$

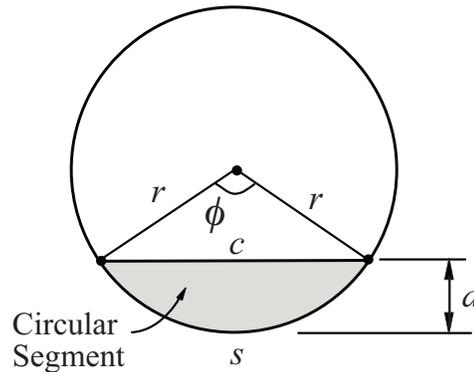
FUNDAMENTALS OF ENGINEERING

MATHEMATICS

CIRCULAR SEGMENT & CIRCULAR SECTOR

FE/PE
EXAMS

Circular Segment



r = Radius
 ϕ = Angle
 s = Arc Length
 c = Chord
 d = Depth

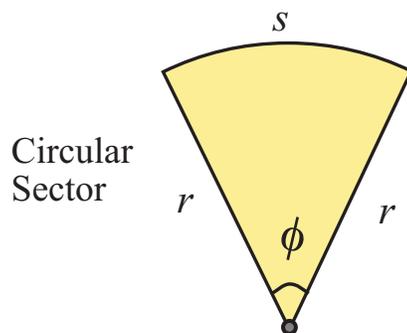
Circular segment is an area of a circle which is "cut off" from the rest of the circle by a secant (chord).

$$A = \frac{r^2}{2} (\phi - \sin \phi)$$

$$\phi = \frac{s}{r} = 2 \left\{ \arccos \left(\frac{r - d}{r} \right) \right\}$$

Circular Sector

NCEES Reference
Handbook, Page-24



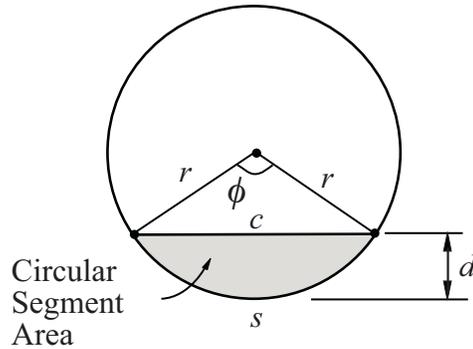
$$\phi = \frac{s}{r}$$

$$A = \frac{\phi r^2}{2} = \frac{s r}{2}$$

FUNDAMENTALS OF ENGINEERING
MATHEMATICS
AREA COMPUTATIONS

Problem: (Circular Segment)

FE/PE
EXAMS



$r = 9$ cm. (Radius)
 $\phi = 120^\circ$ (Angle)

A circular segment is shown in the figure. Using the listed data for the radius and the angle, answer the following:

(1) The shaded area (cm^2) is most nearly:

- (A) 28.5
- (B) 35.6
- (C) 49.8
- (D) 62.5

$A_{\text{segment}} = ?$

(2) The arc length (s) in cm is most nearly:

- (A) 23.8
- (B) 20.5
- (C) 18.8
- (D) 12.2

$s = ?$

(3) The chord length (s) in cm is most nearly:

- (A) 23.8
- (B) 20.5
- (C) 18.8
- (D) 15.6

$c = ?$

Hint:

NCEES Reference Handbook, Page-24

(4) The depth (d) in cm is most nearly:

- (A) 3.8
- (B) 4.5
- (C) 5.3
- (D) 6.2

$d = ?$

Answers:

- | | |
|-----|---|
| (1) | C |
| (2) | C |
| (3) | D |
| (4) | B |

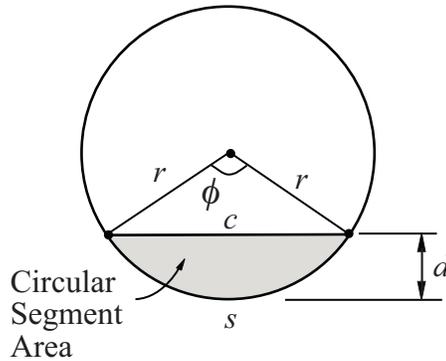
FUNDAMENTALS OF ENGINEERING

MATHEMATICS

AREA COMPUTATIONS

Problem: (Circular Segment)

FE/PE
EXAMS



$r = 12$ cm. (Radius)
 $\phi = 100^\circ$ (Angle)

A circular segment is shown in the figure. Using the listed data for the radius and the angle, answer the following:

(1) The shaded area (cm^2) is most nearly:

- (A) 61.5
- (B) 39.6
- (C) 48.7
- (D) 54.8

$A_{\text{segment}} = ?$

(2) The arc length (s) in cm is most nearly:

- (A) 26.4
- (B) 20.9
- (C) 17.6
- (D) 15.3

$s = ?$

(3) The chord length (c) in cm is most nearly:

- (A) 26.4
- (B) 20.9
- (C) 18.4
- (D) 15.3

$c = ?$

Hint:

NCEES Reference
Handbook, Page-24

(4) The depth (d) in cm is most nearly:

- (A) 3.8
- (B) 4.3
- (C) 5.8
- (D) 6.9

$d = ?$

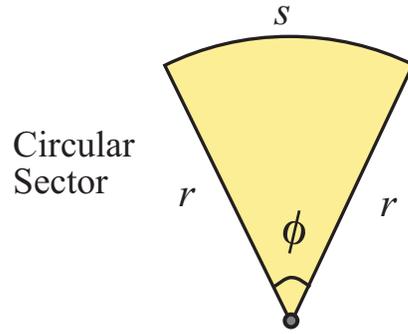
Answers:

- | | |
|-----|---|
| (1) | D |
| (2) | B |
| (3) | C |
| (4) | B |

FUNDAMENTALS OF ENGINEERING
MATHEMATICS
AREA COMPUTATIONS

Problem: (Circular Sector)

FE/PE
EXAMS



$r = 9$ cm. (Radius)
 $\phi = 65^\circ$ (Angle)

A circular sector is shown in the figure. Using the listed data for the radius and the angle, answer the following:

(1) The shaded area of the sector (cm^2) is most nearly:

- (A) 45.9
- (B) 55.6
- (C) 69.8
- (D) 92.5

$A_{\text{sector}} = ?$

(2) The arc length (s) in cm is most nearly:

- (A) 26.8
- (B) 18.5
- (C) 14.8
- (D) 10.2

$s = ?$

(3) The chord length (c) in cm is most nearly:

- (A) 8.8
- (B) 9.7
- (C) 11.8
- (D) 13.6

$c = ?$

Hint:

NCEES Reference Handbook, Page-24

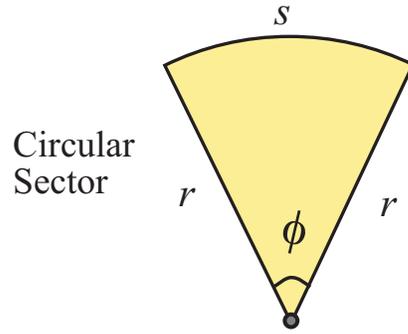
Answers:

- | | |
|-----|---|
| (1) | A |
| (2) | D |
| (3) | B |

FUNDAMENTALS OF ENGINEERING
MATHEMATICS
AREA COMPUTATIONS

Problem: (Circular Sector)

FE/PE
EXAMS



$r = 12$ cm. (Radius)
 $\phi = 35^\circ$ (Angle)

A circular sector is shown in the figure. Using the listed data for the radius and the angle, answer the following:

(1) The shaded area of the sector (cm^2) is most nearly:

- (A) 44
- (B) 53
- (C) 66
- (D) 92

$A_{\text{sector}} = ?$

(2) The arc length (s) in cm is most nearly:

- (A) 7.3
- (B) 8.5
- (C) 9.8
- (D) 10.2

$s = ?$

(3) The chord length (c) in cm is most nearly:

- (A) 6.8
- (B) 7.2
- (C) 8.8
- (D) 9.6

$c = ?$

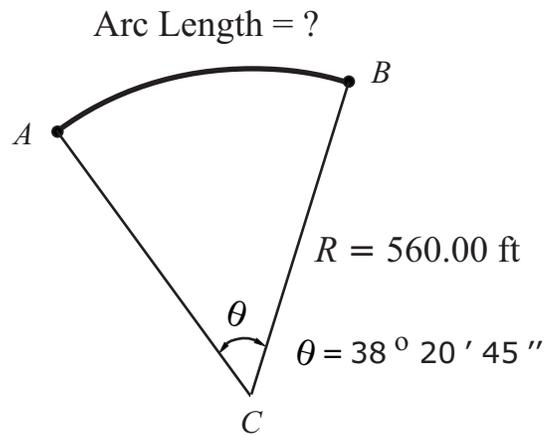
Hint:

NCEES Reference Handbook, Page-24

Answers:

- | | |
|-----|---|
| (1) | A |
| (2) | A |
| (3) | B |

Problem: (Bearings & Azimuths) HK



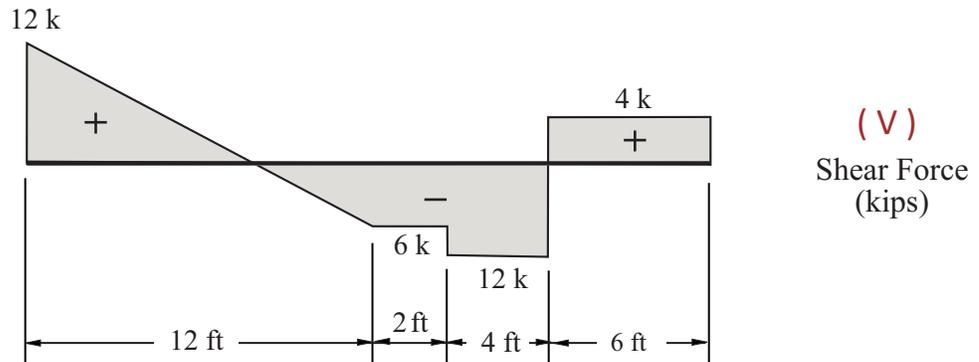
A circular arc has a radius of 560.00 ft and a central angle of $38^\circ 20' 45''$. Using the listed data and the figure, answer the following questions:

- (1) the central angle (radians) is most nearly, θ
 - (A) 0.469
 - (B) 0.513
 - (C) 0.669
 - (D) 0.725

- (2) the arc length AB (feet) is most nearly, s
 - (A) 486.7
 - (B) 374.8
 - (C) 312.0
 - (D) 286.5

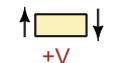
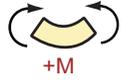
FUNDAMENTALS OF ENGINEERING
MECHANICS OF MATERIALS
SHEAR & MOMENT DIAGRAMS

Problem: Shear Force and Bending Moment Diagrams



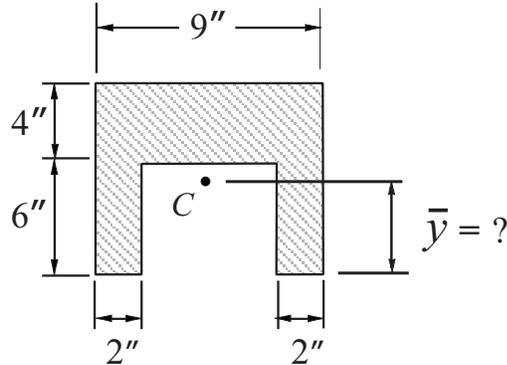
The shear force diagram of a determinate beam is given as shown. Knowing that all lines in the diagram are straight, the bending moment at each end of the beam is zero and there are no concentrated moments (couples) anywhere in the beam, answer the following question:

The maximum magnitude of the bending moment (ft-kips) in the beam is most nearly:

- 

- (A) 35.50
 - (B) 48.00
 - (C) 54.50
 - (D) 62.00

$M_{\max} = ?$

FUNDAMENTALS OF ENGINEERING
CENTROIDS & MOMENTS OF INERTIA
 NCEES Reference Handbook / Page 66



FE/PE
EXAMS

The dimensions of a composite area are given as shown in the figure. Using the listed data answer the following questions:

(1) the distance \bar{y} (in.) for the centroid of the area is most nearly

- (A) 7.30
- (B) 7.82
- (C) 6.75
- (D) 6.00

$\bar{y} = ?$

(2) the moment of inertia (in.^4) about the horizontal centroidal axis is most nearly (I_{cx})

- (A) 642
- (B) 504
- (C) 480
- (D) 395

$I_{cx} = ?$

(3) the moment of inertia (in.^4) about the vertical centroidal axis is most nearly (I_{cy})

- (A) 468
- (B) 545
- (C) 648
- (D) 735

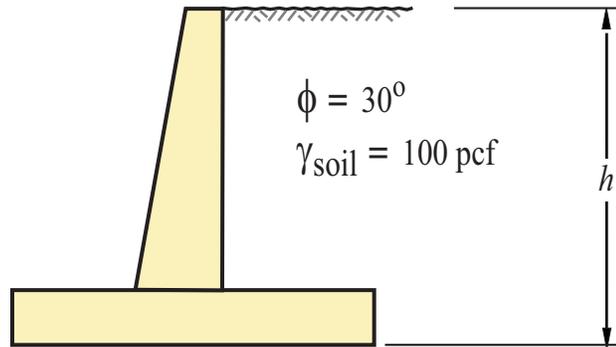
$I_{cy} = ?$



ANSWERS

RETAINING WALLS

RANKINE COEFFICIENT OF ACTIVE SOIL PRESSURE



$$K_a = \frac{1 - \sin \phi}{1 + \sin \phi}$$

ϕ = Angle of internal friction

K_a = Rankine active earth pressure coefficient

γ_{soil} = Unit weight of soil

γ_{con} = Unit weight of concrete

Rankine Coefficient of active earth pressure:

$$\left. \begin{array}{l} \phi = 30^\circ \\ K_a = ? \end{array} \right\} K_a = \frac{1 - \sin \phi}{1 + \sin \phi} = \frac{1 - \sin 30^\circ}{1 + \sin 30^\circ} = \frac{1 - 0.5}{1 + 0.5} = 0.333$$

National Society of Professional Engineers Code of Ethics

Fundamental Canons

Engineers, in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health and welfare of the public.
2. Perform services only in areas of their competence.
3. Issue public statements only in an objective and truthful manner.
4. Act for each employer or client as faithful agents or trustees.
5. Avoid deceptive acts.
6. Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

Rules of Practice / Canon 1.

Engineers shall hold paramount the safety, health, and welfare of the public.

- a. If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.
- b. Engineers shall approve only those engineering documents that are in conformity with applicable standards.
- c. Engineers shall not reveal facts, data or information without the prior consent of the client or employer except as authorized or required by law or this Code.

2. Perform services only in areas of their competence. (Three Rules of Practice)

3. Issue public statements only in an objective and truthful manner. (Three Rules of Practice)

4. Act for each employer or client as faithful agents or trustees. (Five Rules of Practice)

5. Avoid deceptive acts. (Two Rules of Practice)

III. Professional Obligations

1. Engineers shall be guided in all their relations by the highest standards of honesty and integrity.

a. Engineers shall acknowledge their errors and shall not distort or alter the facts.

b. Engineers shall advise their clients or employers when they believe a project will not be successful.

c. Engineers shall not accept outside employment to the detriment of their regular work or interest. Before accepting any outside engineering employment they will notify their employers. Engineers shall not attempt to attract an engineer from another employer by false or misleading pretenses.

d. Engineers shall not promote their own interest at the expense of the dignity and integrity of the profession. Continued

NSPE Code of Ethics / True or False questions

- 1- Engineers, in the fulfillment of their professional duties, must carefully consider the safety, health, and welfare of the public.
- 2- Engineers may perform services outside of their areas of competence as long as they inform their employers or clients.
- 3- Engineers may issue subjective and partial statements if such statements are in writing and consistent with the best interests of their employers, clients, or the public.
- 4- Engineers shall act for each employer or client as faithful agents or trustees.
- 5- Engineers shall not be required to engage in truthful acts when required to protect the public health, safety, and welfare.
- 6- Engineers may not be required to follow the provisions of state or federal law when such actions could endanger or compromise their employer or their clients' interests.
- 7- If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employers or clients and such other authority as may be appropriate.
- 8- Engineers may review but shall not approve those engineering documents that are in conformity with applicable standards.
- 9- Engineers shall not reveal facts, data...information without the prior consent of the client or employer except as authorized or required by law or this Code.
- 10- Engineers shall not permit the use of their names or associates in business ventures with any person or firm that they believe is engaged in fraudulent or dishonest enterprise, unless such enterprise or activity is deemed consistent with applicable state or federal law.
- 11- Engineers having knowledge of any alleged violation of this Code, following a period of 30 days during which the violation is not corrected,

shall report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.

- 12- Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.
- 13- Engineers shall not affix their signatures to plans or documents dealing with subject matter in which they lack competence, but may affix their signatures to plans or documents not prepared under their direction and control where they have a good faith belief that such plans or documents were competently prepared by another designated party.
- 14- Engineers may accept assignments and assume responsibility for coordination of an entire project and shall sign and seal the engineering documents for the entire project, including each technical segment of the plans and documents.
- 15- Engineers shall strive to be objective and truthful in professional reports, statements or testimony, with primary consideration for the best interests of the engineers' clients or employers. The engineers' reports shall include all relevant and pertinent information in such reports, statements, or testimony, which shall bear the date on which the engineers were retained by the clients to prepare the reports.
- 16- Engineers may express publicly technical opinions that are founded upon knowledge of the facts and competence in the subject matter.
- 17- Engineers shall not issue statements, criticisms, or arguments on technical matters that are inspired or paid for by interested parties, unless they have prefaced their comments by explicitly identifying the interested parties on whose behalf they are speaking and revealing the existence of any interest the engineers may have in the matters.
- 18- Engineers may not participate in any matter involving a conflict of interest if it could influence or appear to influence their judgment or the quality of their services.

- 19- Engineers shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties.
- 20- Engineers shall not solicit but may accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible, if such compensation is fully disclosed.
- 21- Engineers in public service as members, advisors, or employees of a governmental or quasi-governmental body or department may participate in decisions with respect to services solicited or provided by them or their organizations in private or public engineering practice as long as such decisions do not involve technical engineering matters for which they do not possess professional competence.
- 22- Engineers shall not solicit nor accept a contract from a governmental body on which a principal or officer of their organization serves as a member.
- 23- Engineers shall not intentionally falsify their qualifications nor actively permit written misrepresentation of their or their associate's qualifications. Engineers may accept credit for previous work performed where the work was performed during the period the engineers were employed by the previous employer. Brochures or other presentations incident to the solicitation of employment shall specifically indicate the work performed and the dates the engineers were employed by the firms.
- 24- Engineers shall not offer, give, solicit, nor receive, either directly or indirectly, any contribution to influence the award of a contract by a public authority, or which may be reasonably construed by the public as having the effect or intent of influencing the award of a contract unless such contribution is made in accordance with applicable federal or state election campaign finance laws and regulations.
- 25- Engineers shall acknowledge their errors after consulting with their employers or clients.

Answers:

- 1- False - see NSPE Code of Ethics I.1.
- 2- False - see NSPE Code of Ethics I.2.
- 3- False - see NSPE Code of Ethics I.3.
- 4- True - see NSPE Code of Ethics 1.4.
- 5- False - see NSPE Code of Ethics I.5.
- 6- False - see NSPE Code of Ethics I.6.
- 7- True - see NSPE Code of Ethics II.1.a.
- 8- False - see NSPE Code of Ethics II.1.b
- 9- True - see NSPE Code of Ethics II.1.c.
- 10- False - see NSPE Code of Ethics II.1.d.
- 11- False - see NSPE Code of Ethics II.1.e.
- 12- True - see NSPE Code of Ethics II.2.a.
- 13- False - see NSPE Code of Ethics II.2.b.
- 14- False - see NSPE Code of Ethics II.2.c.
- 15- False - see NSPE Code of Ethics II.3.a.
- 16- True - see NSPE Code of Ethics II.3.b.
- 17- True - see NSPE Code of Ethics II.3.c.
- 18- False - see NSPE Code of Ethics II.4.a.
- 19- True - see NSPE Code of Ethics II.4.b.
- 20- False - see NSPE Code of Ethics II.4.c.
- 21- False - see NSPE Code of Ethics II.4.d.
- 22- True - see NSPE Code of Ethics II.4.e.
- 23- False - see NSPE Code of Ethics II.5.a.
- 24- False - see NSPE Code of Ethics II.5.b.
- 25- False -see NSPE Code of Ethics III.1.a

Read more at:

<http://www.nspe.org/resources/ethics/ethics-resources/code-ethics-examination#sthash.7OWKvprb.dpuf>

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