MTH-2010, FALL 2014
DR. GRAHAM-SQUIRE

MTEL PRACTICE - 9 QUESTION QUIZ

(1) The letters L, M, and N represent digits (possibly equal) in the twelve digit number $x = 111,111,111,LMN$. For which values of L, M, and N is x divisible by 40?

(A) L=4, M=2, N=0

(B) L=1, M=0, N=0

(C) L=0, M=0, N=4

(D) L=3, M=2, N=0

(2) If Q and R are integers, which of the following expressions could be irrational?

(I) $\frac{Q}{R}$
(II) $Q - R$
(III) $\sqrt{Q \times R}$
(IV) $R \times Q^2$
(V) $0.00\overline{RQR}$

(A) I, III, IV

(B) III only

(C) V only

(D) II, III, V

(E) None could be irrational

(3) Here is a students work solving an equation:

$$\begin{aligned} x - 4 &= -2x + 6 \\ x - 4 + 4 &= -2x + 6 + 4 \\ x &= -2x + 10 \\ x - 2x &= 10 \\ x &= 10 \end{aligned}$$

Which of the following statements is true?

(A) The students solution is correct.

(B) The student did not correctly use properties of equality.

(C) The student did not correctly use the distributive property.

(D) The student did not correctly use the commutative property.

(4) Which of the following are word problems for $\frac{2}{3} - \frac{1}{2}$?

(I) Bob pours $\frac{2}{3}$ cup of water into a pot, then pours out $\frac{1}{2}$. How much water is in the pot now?

(II) Yesterday Jane ate $\frac{2}{3}$ of a chocolate bar, and today she ate $\frac{1}{2}$ of a chocolate bar the same size. How much more did Jane eat yesterday than today?

(III) $\frac{2}{3}$ of a bridge has been paved. $\frac{1}{2}$ of the paved part of the bridge already has guard rails. What fraction of the bridge has guard rails?

(IV) Jack keeps $\frac{2}{3}$ of his money in a savings account. He decides to take $\frac{1}{2}$ of his money and put it in the stock market. If he takes it all out of his savings account, what fraction of his money does he still have in the savings account?

(A) All of them.

(B) I, II, and IV

(C) II and III

(D) II and IV

(5) There are six balls in a bag two red and four green. Six children take turns picking a ball out of the bag without looking. They do not return any balls to the bag. What is the probability that the first two children to pick from the bag pick the red balls?

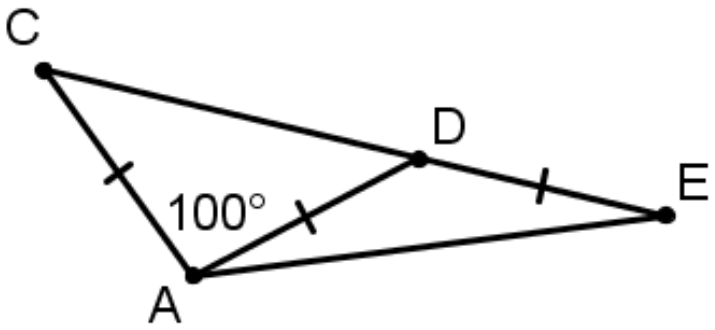
(A) $\frac{1}{3}$

(B) $\frac{1}{8}$

(C) $\frac{1}{9}$

(D) $\frac{1}{15}$

(6) In the triangle below, $\overline{AC} \cong \overline{AD} \cong \overline{DE}$ and $m\angle CAD = 100°$. What is $m\angle DAE$?



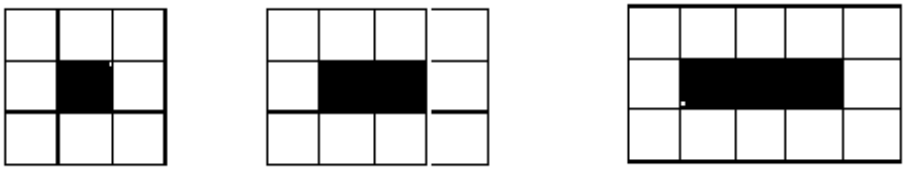
(A) 20°

(B) 25°

(C) 30°

(D) 40°

(7) The pattern below consists of a row of black squares surrounded by white squares.



How many white squares would surround a row of 159 black squares?

(A) 326

(B) 324

(C) 321

(D) 318

(8) The mean distance from the earth to the sun is approximately 93 million miles, or one astronomical unit (AU). The mean distance from Uranus to the sun is 1.787×10^9 miles. What is the approximate mean distance from Uranus to the sun in astronomical units?

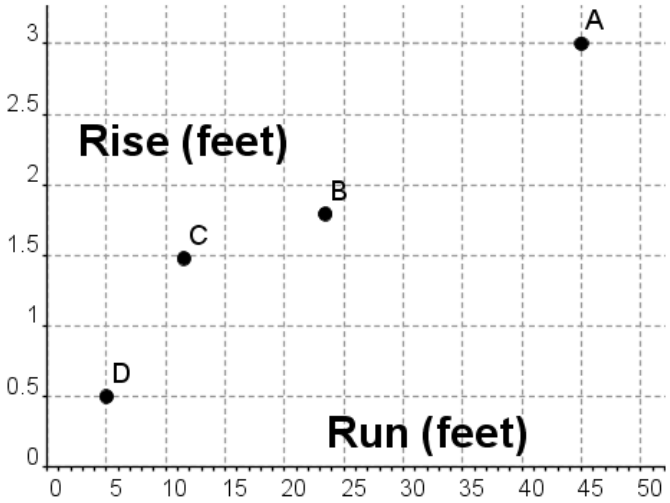
(A) 20 AU

(B) 200 AU

(C) 2,000 AU

(D) 20,000 AU

(9) The Americans with Disabilties Act (ADA) regulations state that the maximum slope for a wheelchair ramp in new construction is 1:12, although slopes between 1:16 and 1:20 are preferred. The maximum rise for any run is 30 inches. The graph below shows the rise and runs of four different wheelchair ramps. Which ramp is in compliance with the ADA regulations for new construction?



(A) A

(B) B

(C) C

(D) D