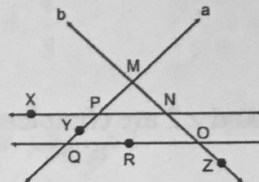


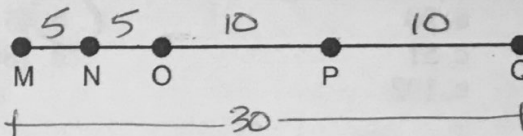
Choose the best answer choice.

1. What is the next number in the sequence: 2, -1, -4, -7, ...?
 a. -9 **b. -10** c. 10 d. -11 e. -12

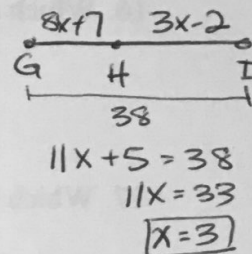
2. Name three non-collinear points.
 a. P, Y, Q **b. M, N, P**
 c. M, N, Z d. Q, R, O
 e. X, N, P



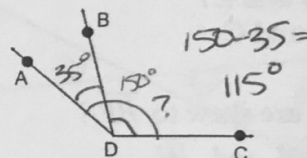
3. Find the length of $\overline{NP}$. $MQ = 30$, $MN = 5$, $MN = NO$, $OP = PQ$.
 a. 5 b. 10
c. 15 d. 20
 e. 25



4. Point H is between G and I. Solve for x when $GH = 8x + 7$, $HI = 3x - 2$, and $GI = 38$.
a. 3 b. 5 c. 7 d. 31 e. 39

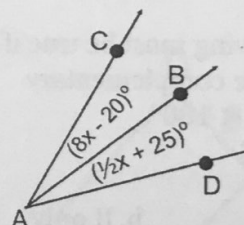


5. Find $m\angle BDC$. Where $m\angle ADC = 150^\circ$ and $m\angle ADB = 35^\circ$.
 a. 185° **b. 115°**
 c. 25° d. 175°
 e. 100°



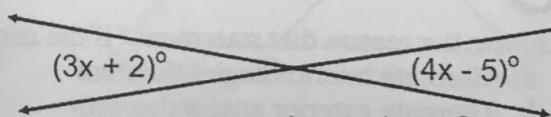
6. Find the midpoint of a segment with endpoints $A(-7, 3)$ and $B(3, -3)$.
 a. $(-2, -3)$ **b. $(-2, 0)$** c. $(-5, 0)$ d. $(2, 0)$ e. $(-5, -3)$

7. $\overline{AB}$ bisects $\angle CAD$. Find the value of x.
 a. 2 b. 56
 c. 5 d. 28
e. 6



$$\begin{aligned} 8x - 20 &= \frac{1}{2}x + 25 \\ 7.5x &= 45 \\ x &= 6 \end{aligned}$$

8. Find the value of x.
 a. 13.3 **b. 7**
 c. 14 d. 26
 e. 25



$$\begin{aligned} 3x + 2 &= 4x - 5 \\ 7 &= x \end{aligned}$$

9. Find the area of a triangle with a base of 8 m and a height of 4 m. $A = \frac{1}{2}(8)(4) = 16\text{m}^2$
 a. 19 m b. 32m^2 **c. 16m^2** d. 16 m e. 12m^2

10. What is the converse of "If you are hungry, then you did not eat lunch?"
 a. If you did not eat lunch, then you are not hungry.
 b. If you ate lunch, then you are not hungry.
 c. If you are not hungry, then you ate lunch.
 d. You are hungry if and only if you did not eat lunch.
e. None of the above

11. Which one of the following statements cannot be written as a true biconditional statement?
 a. If the sum of two angles is 90° , then they are complementary.
 b. If two angles have the same measurement, then they are congruent.
c. If $5x + 7 = 22$, then $x = 3$.
 d. If two angles are a linear pair, then they are supplementary.
 e. If Y lies between X and Z, then $XY + YZ = XZ$.

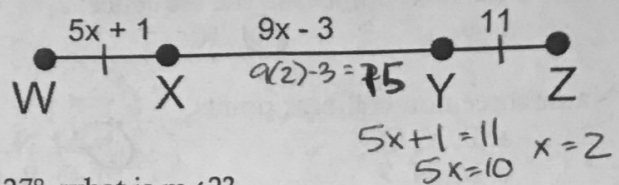
both!

12. Use the Multiplication Property of Equality to complete "If $m\angle A = 15^\circ$, then $4(m\angle A) = \underline{\hspace{2cm}}$."
- a. 15° b. 30° c. 45° **d. 60°** e. 75°

13. In the diagram, $\overline{WX} \cong \overline{YZ}$. Find the length of $\overline{XZ}$.

a. 11
c. 15
e. 26

b. 2
d. 4

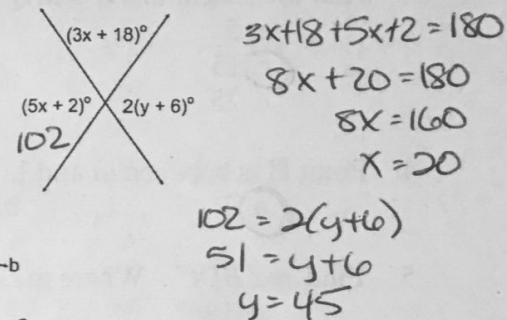


14. Two angles $\angle 1$ and $\angle 2$ are complementary. If $m\angle 1$ is 27° , what is $m\angle 2$?
- a. 27° b. 54° c. 90° **d. 63°** e. 153°

15. Solve for y in the diagram.

a. 20
c. 51
e. 102

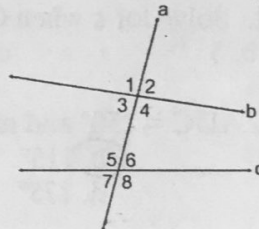
b. 45
d. 78



16. Which angles are consecutive interior angles?

a. $\angle 3$ and $\angle 5$
c. $\angle 3$ and $\angle 7$
e. A and C

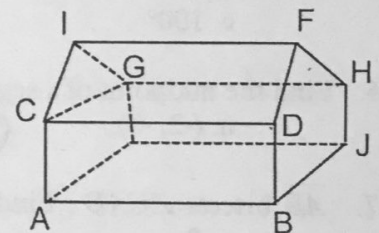
b. $\angle 4$ and $\angle 6$
d. A and B



17. Which lines are skew to $\overline{BF}$?

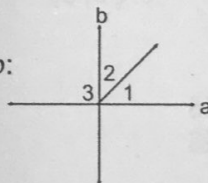
a. $\overline{DH}$ and $\overline{JH}$
c. $\overline{CD}$ and $\overline{GH}$
e. B and C

b. $\overline{CA}$ and $\overline{IG}$
d. A and B



18. Which of the following must be true if $a \perp b$:

I. $\angle 1$ and $\angle 2$ are complementary
II. $m\angle 1 + m\angle 2 < 180^\circ$
III. $m\angle 1 = m\angle 2$



a. I only

b. II only

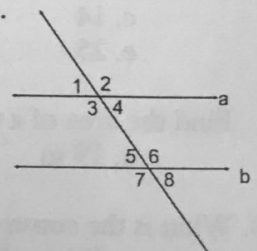
c. I and II

d. I and III

e. I, II, and III

19. $a \parallel b$. Choose the reason that statement "If the $m\angle 1 = 65^\circ$, then $m\angle 5 = 65^\circ$ " is true.

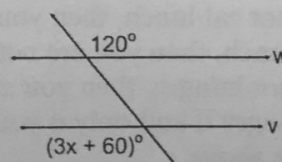
a. Alternate interior angles theorem
b. Alternate exterior angles theorem
c. Consecutive interior angles theorem
d. Vertical angles theorem
e. Corresponding angles postulate



20. What value of x would make lines w and v parallel?

a. 30
c. 60
e. 50

b. 20
d. 40



Handwritten calculations:
 $3x + 60 = 120$
 $3x = 60$
 $x = 20$

21. Which of the statements must be true if $a \parallel b$ and $x \parallel y$:

I. $m\angle 1 = m\angle 5$
II. $m\angle 3 + m\angle 5 = 180^\circ$
III. $m\angle 7 + m\angle 8 = 180^\circ$

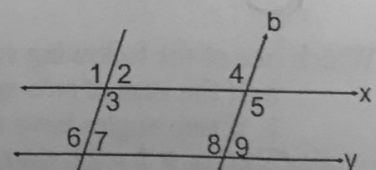
a. I only

b. II only

c. III only

d. I and III only

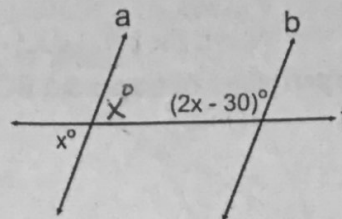
e. I, II, and III



22. What value of x makes $a \parallel b$?

- a. 10
c. 50
e. 90

b. 30
d. 70



$$\begin{aligned} x + 2x - 30 &= 180 \\ 3x - 30 &= 180 \\ 3x &= 210 \\ x &= 70 \end{aligned}$$

23. Find the slope of the line that passes through $(5, 2)$ and $(8, -1)$.

a. 1

b. -1

c. $-\frac{1}{3}$

d. $\frac{1}{3}$

e. 2

24. Which equation of the lines passes through $(3, -2)$ and is parallel to $y = \frac{2}{3}x$?

a. $y = \frac{2}{3}x - 2$

b. $y = \frac{2}{3}x + 3$

c. $y = \frac{2}{3}x - 4$

d. $y = \frac{2}{3}x$

e. $y = \frac{2}{3}x + 4$

$$-2 = \frac{2}{3}(3) + b \quad b = -4$$

25. Which equation of a line is perpendicular to $y = -\frac{2}{3}x - \frac{1}{3}$?

a. $y = -\frac{2}{3}x + 3$

b. $y = -\frac{5}{2}x + 2$

c. $y = -\frac{5}{2}x + 3$

d. $y = 3x + 3$

e. $y = \frac{3}{2}x + 6$

26. Find the measure of $\angle 1$.

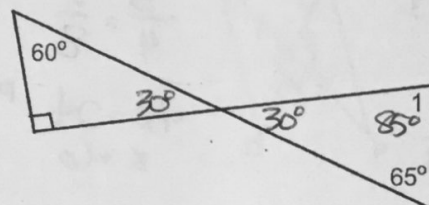
a. 50°

c. 60°

e. 85°

b. 90°

d. 30°



27. The perimeter of $\triangle HIJ$ is 36. The extended ratio of the sides is 2:3:7. Find the lengths of the sides.

a. 3, 4, 9

b. 4, 6, 14

c. 8, 12, 28

d. 6, 9, 21

e. 2, 3, 7

$$\begin{aligned} 2x + 3x + 7x &= 36 \\ 12x &= 36 \\ x &= 3 \end{aligned}$$

28. In the diagram, $\frac{AB}{BD} = \frac{AC}{CE}$. Find the length of $\overline{AE}$.

a. 7.5

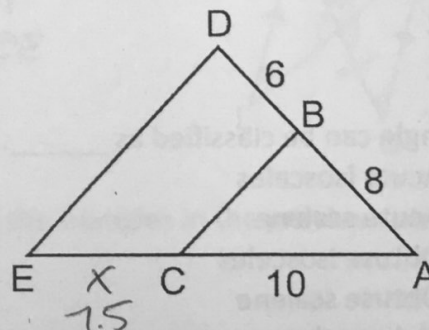
b. 15

c. 17.5

d. $13\frac{1}{3}$

e. $28\frac{1}{3}$

$$\begin{aligned} \frac{8}{6} &= \frac{10}{x} \\ 8x &= 60 \\ x &= 7.5 \end{aligned}$$



29. The two trapezoids shown are similar. What are the values of x and y ?

Given the scale factor is 2:3

a. $x = 40, y = 10$

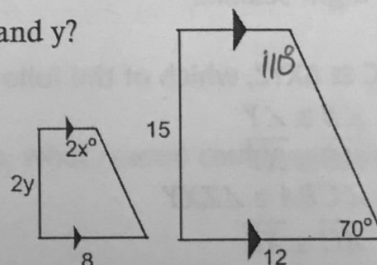
b. $x = 55, y = 5$

c. $x = 55, y = 10$

d. $x = 110, y = 5$

e. $x = 110, y = 10$

$$\begin{aligned} \frac{2y}{15} &= \frac{8}{12} \\ 24y &= 120 \\ y &= 5 \end{aligned}$$



$$\begin{aligned} 2x &= 110 \\ x &= 55 \end{aligned}$$

30. The triangles are similar. Which of the following is not a correct statement?

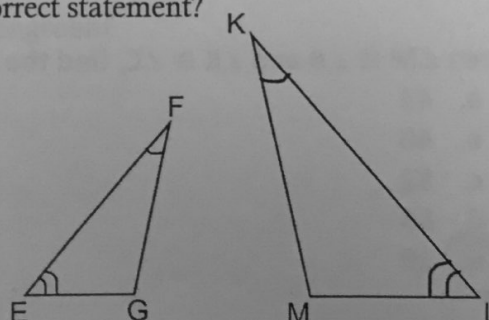
a. $\angle K \cong \angle F$

b. $\triangle FEG \sim \triangle KLM$

c. $\frac{GE}{ML} = \frac{GF}{MK}$

d. $\frac{ML}{FG} = \frac{KL}{FE}$

e. $\angle M \cong \angle G$



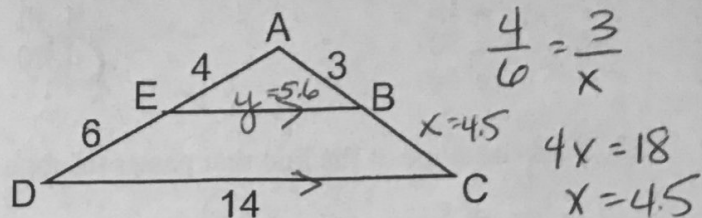
31. What is the perimeter of trapezoid BCDE if $\overline{EB} \parallel \overline{DC}$?

- a. 26
- b. 28
- c. 31
- d. 38
- e. 30 or 30.1

$$\frac{4}{y} = \frac{10}{14}$$

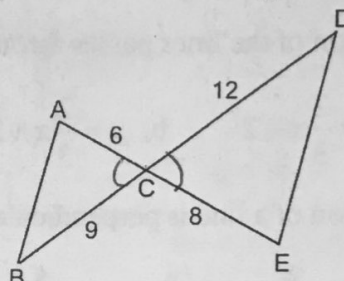
$$10y = 56$$

$$y = 5.6$$



32. Which similarity statement and postulate or theorem correctly identifies the triangles' relationship?

- a. $\triangle ABC \sim \triangle CDE$ by SSS Similarity Theorem
- b. $\triangle ABC \sim \triangle CDE$ by SAS Similarity Theorem
- c. $\triangle ABC \sim \triangle EDC$ by SSS Similarity Theorem
- d. $\triangle ABC \sim \triangle EDC$ by AA Similarity Postulate
- e. $\triangle ABC \sim \triangle EDC$ by SAS Similarity Theorem



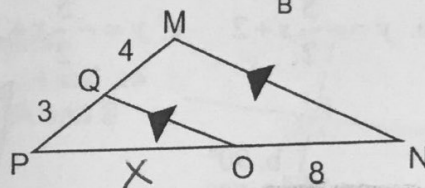
33. What is the length of $\overline{OP}$?

- a. 1.5
- b. $10\frac{2}{3}$
- c. 5
- d. 6
- e. $7\frac{1}{3}$

$$\frac{3}{4} = \frac{x}{8}$$

$$4x = 24$$

$$x = 6$$



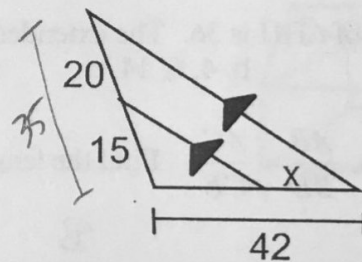
34. Find the value of x.

- a. 22
- b. 24
- c. 26
- d. 28
- e. 30

$$\frac{x}{42} = \frac{20}{35}$$

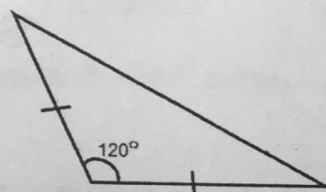
$$35x = 840$$

$$x = 24$$



35. The triangle can be classified as _____.

- a. Acute isosceles
- b. Acute scalene
- c. Obtuse isosceles
- d. Obtuse scalene
- e. Right scalene

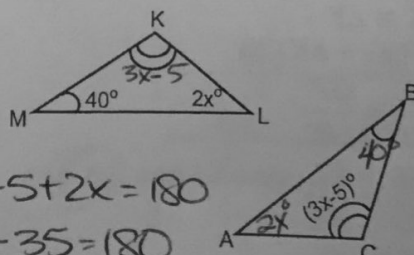


36. If $\triangle ABC \cong \triangle XYZ$, which of the following statements below is not true?

- a. $\angle B \cong \angle Y$
- b. $\overline{AB} \cong \overline{XY}$
- c. $\angle CBA \cong \angle ZXY$
- d. $\overline{AC} \cong \overline{XZ}$
- e. $\angle BAC \cong \angle YXZ$

37. Given $\angle M \cong \angle B$ and $\angle K \cong \angle C$, find the value of x.

- a. 43
- b. 40
- c. 82
- d. 58
- e. 29



$$40 + 3x - 5 + 2x = 180$$

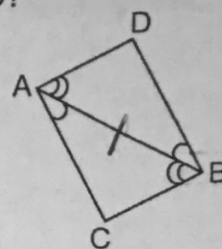
$$5x + 35 = 180$$

$$5x = 145$$

$$x = 29$$

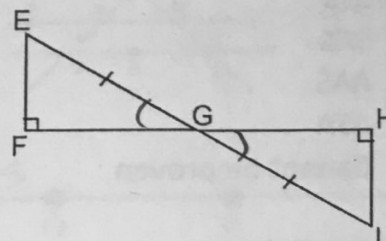
38. Which postulate or theorem can be used to prove that $\triangle ABC \cong \triangle BAD$?

- a. SSS
- b. SAS
- ☒ c. ASA
- d. AAS
- e. None of the above



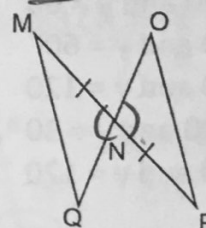
39. Which postulate or theorem can be used to prove that $\triangle EFG \cong \triangle IHG$?

- a. SSS
- b. SAS
- c. ASA
- ☒ d. AAS
- e. None of the above



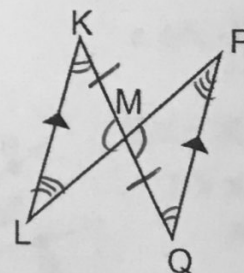
40. What is the third congruence needed to prove that $\triangle MNQ \cong \triangle PNO$ by ASA?

- a. $\angle Q \cong \angle P$
- b. $\angle MNQ \cong \angle PNO$
- c. $\angle M \cong \angle O$
- ☒ d. $\angle M \cong \angle P$
- e. $\overline{QN} \cong \overline{NO}$



41. Which postulate or theorem proves the triangles are congruent given M is the midpoint of $\overline{KQ}$ and $\overline{KL} \parallel \overline{PQ}$?

- both {
- a. SSS
 - b. SAS
 - ☒ c. ASA
 - ☒ d. AAS
 - e. AAA



42. Which statement correctly described the congruence of the triangles in the previous problem?

- a. $\triangle KML \cong \triangle PQM$
- b. $\triangle KLM \cong \triangle PQM$
- ☒ c. $\triangle KML \cong \triangle QMP$
- d. $\triangle KLM \cong \triangle PMQ$
- e. $\triangle KML \cong \triangle MQP$

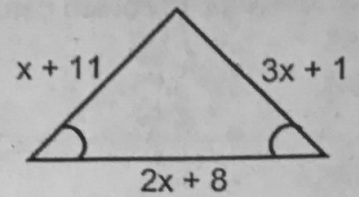
43. After proving the triangle congruent in the previous problems, what reason could you give to prove that $\overline{KL} \cong \overline{PQ}$?

- a. Vertical Angles Theorem
- b. Reflexive Property of Congruence
- ☒ c. Corresponding parts of congruent triangles are congruent
- d. ASA
- e. Definition of midpoint

44. What is the value of x ?

- a. 3
- ☒ b. 5
- c. 7
- d. 9
- e. 11

$$\begin{aligned} x + 11 &= 3x + 1 \\ 10 &= 2x \\ x &= 5 \end{aligned}$$



45. Choose the reason that the triangles are congruent

- all 3!
- ☒ a. SSS
 - ☒ b. SAS
 - ☒ c. AAS
 - ☒ d. ASA
 - e. Cannot be proven



46. Solve for x and y .

- a. $x = 120$ and $y = 60$
- b. $x = 60$ and $y = 60$
- c. $x = 30$ and $y = 120$
- ☒ d. $x = 120$ and $y = 30$
- e. $x = 60$ and $y = 120$

