حل أسئلة اختبار تجريبي وفق الهيكل الوزاري منهج ريفيل

وزارة التربية والتعليم
MINISTRY OF EDUCATION

الفصل الدراسي الأول

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(نموذج الإجابة)

امتحان تجريبي في مادة

برنامج الشراكة المدرسية بين

مدرسة أم عمارة للتعليم الثانوي
مدرسة المعرفة (2) الحلقة الثانية والثالثة بنات

PART – A

Q1)

(i)

$$(h^2)^2 - (16)^2$$
$$(h^2 + 16)(h^2 - 16)$$
$$(h^2 + 16)(h^2 - 4^2)$$
$$(h^2 + 16)(h + 4)(h - 4)$$

(ii)

$$(3x^3 + x^2) + (-75x - 25)$$
$$x^2(3x + 1) - 25(3x + 1)$$
$$(x^2 - 25)(3x + 1)$$
$$((x)^2 - (5)^2)(3x + 1)$$
$$(x + 5)(x - 5)(3x + 1)$$

Q2)

1. If $m\angle ABD = 60°$, find $m\angle BDC$.

$\angle ABD \cong \angle BDC$	Theorem 7.16
$m\angle ABD = m\angle BDC$	Defintion of congruent
$60° = m\angle BDC$	Substitution

2. If $AE = 8$, find AC.

$\overline{AE} \cong \overline{CE}$	Diagonals bisect each other.
$AE = CE$	Defintion of congruent
$AC = AE + CE$	Segment Addition Postulate
$AC = 8 + 8$	Substitution
$AC = 16$	Simplify.

3. If $AB = 26$ and $BD = 20$, find AE.

$BE \equiv \frac{1}{2}BD$	Diagonals of a ▱ bisect each other.
$BE = 10$	Substitution
$AB^2 = AE^2 + BE^2$	Pythagorean Theorem
$26^2 = AE^2 + 10^2$	Substitution
$676 = AE^2 + 100$	Simplify.
$576 = AE^2$	Subtraction Property of Equality
$24 = AE$	Simplify.

4. Find $m\angle CEB$.

$\overline{BD} \perp \overline{CA}$	Theorem 7.15
$m\angle CEB = 90°$	$\perp$ lines meet at right angles.

5. If $m\angle CBD = 58°$, find $m\angle ACB$.

$\overline{AC} \perp \overline{BD}$	Theorem 7.15
$m\angle BEC = 90°$	$\perp$ lines meet at right angles.
$m\angle CBD + m\angle BEC + m\angle ACB = 180°$	Triangle Angle – Sum Theorem
$58° + 90° + m\angle ACB = 180°$	Substitution
$m\angle ACB = 32°$	Subtraction Property of Equality

6. If $AE = 3x - 1$ and $AC = 16$, find x.

$AE \equiv \frac{1}{2}AC$	Diagonals of a ▱ bisect each other.
$3x - 1 = \frac{1}{2}(16)$	Substitution
$3x - 1 = 8$	Simplify.
$x = 3$	Solve.

7. If $m\angle CDB = 6y°$ and $m\angle ACB = (2y + 10)°$, find the value of y

$\overline{AC} \perp \overline{BD}$	Theorem 7.15
$m\angle BEC = 90°$	$\perp$ lines meet at right angles.
$m\angle CBD + m\angle BEC + m\angle ACB = 180°$	Triangle Angle – Sum Theorem
$6y° + 90° + (2y + 10)° = 180°$	Substitution
$8y° + 100 = 180°$	Simplify.
$8y° = 80°$	Subtraction Property of Equality
$y = 10$	Division Property of Equality

A

8. If $AD = 2x + 4$ and $CD = 4x - 4$, find the value of x.

$AD = CD$	Definition of rhombus
$2x + 4 = 4x - 4$	Substitution
$4 = x$	Solve.

Q3)

(i)

Use the Pythagorean Theorem to find AX.

$a^2 + b^2 = c^2$	Pythagorean Theorem
$(BX)^2 + (AX)^2 = (AB)^2$	Substitution
$(8)^2 + (AX)^2 = (12)^2$	Substitution
$64 + (AX)^2 = 144$	Simplify the exponents.
$(AX)^2 = 80$	Subtract 64 from each side.
$AX = \sqrt{80}$	Take the square root of each side
$AX \approx 8.9$	Simplify.

Use the Segment Addition Postulate to find XC.

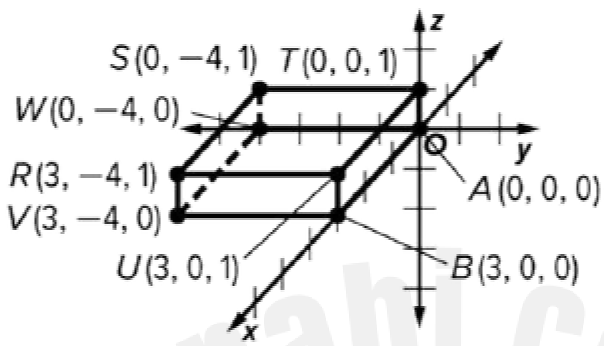
$AC = XC + AX$	Segment Addition Postulate
$14 = XC + 8.9$	Substitution
$5.1 = XC$	Subtract 8.9 from each side.

The length of $\overline{XC}$ is about 5.1 cm.

(ii)

$\frac{BX}{EY} = \frac{AB}{DE}$	$\sim \triangle$s have corr. altitudes proportional to corr. sides.
$\frac{8}{EY} = \frac{12}{8}$	Substitution
$64 = 12EY$	Cross Products Property
$5.3 \approx EY$	Solve for EY.

Q4) (i)



(ii)

$$\begin{aligned} D &= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2} && \text{Distance Formula in Space} \\ &= \sqrt{(9-(-2))^2+(0-5)^2+(4-(-1))^2} && \text{Substitution} \\ &= \sqrt{11^2+(-5)^2+5^2} && \text{Subtract.} \\ &= \sqrt{171} && \text{Simplify.} \end{aligned}$$

So, the distance between X and Y is $\sqrt{171}$ or $3\sqrt{19}$.

Q5)

$\tan 20° = \frac{z}{y}$ — $m\angle$elevation $= 20°$, short side $= z$, long side $= y$

$z = y \tan 20$ — Solve for z.

$\tan 15° = \frac{z}{y+2}$ — $m\angle$elevation $= 15°$, short side $= z$, long side $= y + 2$

$z = (y+2)\tan 15°$ — Solve for z.

Set the two equations solved for z equal to each other and solve for y.

$y \tan 20° = (y+2)\tan 15°$ — original equations

$y \tan 20° = y \tan 15° + 2 \tan 15°$ — Expand the right side.

$y(\tan 20° - \tan 15°) = 2 \tan 15°$ — Subtract $y \tan 15°$ from each side.

$y = \frac{2 \tan 15°}{\tan 20° - \tan 15°}$ — Divide each side by $\tan 20° - \tan 15°$

$y = 5.581$ — Use a calculator.

Add the two segments to find the length of the long leg of the larger triangle.

$2 + 5.581 = 7.581$

Use the cosine ratio to find the hypotenuse of the larger triangle, x.

$\cos 15° = \frac{7.581}{x}$ — original equation

$x = \frac{7.581}{\cos 15°}$ — Solve for x.

$x = 7.8$ — Use a calculator.

So, the value of x is 7.8.

PART -B (MCQ)

1) A
2) C
3) A
4) D
5) D
6) B
7) A
8) C
9) C
10) B
11) B
12) B
13) A
14) B
15) C